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Transcript of *Guevara Noubir, Ph.D*

Thursday, July 24, 2025

Lenovo (United States) Inc. v. Intellectual Ventures, LLC

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Reference Number: 156546

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4
5
6 LENOVO (UNITED STATES) INC.

7 Petitioner,

8 v.

9 INTELLECTUAL VENTURES, II LLC,

10 Patent Owner,

11
12 IPR2024-00124

13 U.S. Patent Number 7,325,140 B2

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17
18 REMOTE DEPOSITION OF
19 GUEVARA NOUBIR, Ph.D.

20 DATE TAKEN: July 24, 2025
21 TIME: 9:00 AM - 11:40 AM
22 PLACE: Via Zoom

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12 NO. 1001 United States Patent Number 8,474,016 6

13 NO. 1020 IPMI Specification v1.5 12

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16 NO. 2009 IPsec VPN Design 48

17 NO. 1005 United States Patent Application 51
Publication US 2003/0226015 A1, Neufeld

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1 P R O C E E D I N G S

2 Thereupon,

3 GUEVARA NOUBIR, Ph.D.,

4 having been duly sworn or affirmed, was examined and
5 testified as follows:

6 THE WITNESS: Yes.

7 EXAMINATION BY COUNSEL FOR THE PETITIONER

8 BY MR. HEINTZ:

9 Q. Good morning, Dr. Noubir. How are you today?

10 A. Good morning, counselor. I'm good. How are
11 you?

12 Q. I'm fine, thank you.

13 Sir, we haven't met before today, correct?

14 A. No, we didn't.

15 Q. Okay. Have you been deposed before today,
16 sir?

17 A. No.

18 Q. Okay. So I'll take a little bit of time and
19 go over some of the ground rules that we use in
20 depositions for your benefit. First and most important
21 is, as you know, there's a court reporter who is
22 recording your testimony today. So it's important that
23 we not talk over each other. So I'll ask that when I
24 ask a question you allow me to finish my question
25 before you begin your answer. And I will tell you that

1 I will do the same. I will try to wait until you
2 complete your answer before I ask another question. Is
3 that okay with you, sir?

4 A. Yes.

5 Q. Also important, sir, is because the
6 deposition testimony is being recorded that you answer
7 questions with full words, not gestures like shaking of
8 the head and not nonverbal sounds like uh-huh or uh-uh.
9 Is that all right, sir?

10 A. Yes.

11 Q. Okay. Thanks. Sir, is there any reason why
12 you are unable to give full and complete and accurate
13 testimony today? For instance, are you taking any
14 medication that would impair your cognitive ability or
15 anything like that?

16 A. No.

17 Q. Okay. Thank you.

18 I'll ask, sir, that when I ask you a question
19 if you don't understand it you let me know and ask me
20 to clarify it. And if you don't do that I'll assume
21 you understood the question. Is that all right?

22 A. Yes, that's fine.

23 (Exhibit No. 2006 identified for the
24 record)

25 BY MR. HEINTZ:

1 Q. Okay. Sir, I'd like to you take a look at
2 your declaration which is in the chat room as Exhibit
3 2006. You can click on that and download it and open
4 it up if you would.

5 A. I have it in front of me.

6 Q. Okay. Great. All right. So I'd ask you to
7 turn to paragraph 62 of your declaration.

8 A. Yes.

9 Q. Okay. And just so we're sure we're in the
10 same place, paragraph 62 is right under the heading
11 Roman numeral VII Ground 5.

12 A. Yes.

13 Q. So this is where your declaration discusses
14 Ground 5 of the petition; is that right?

15 A. Yes.

16 Q. Okay. Ground 5 of the petition is based on a
17 combination of IPMI and Lawrence, correct?

18 A. Yes.

19 Q. Okay. In paragraph 64 of your declaration on
20 the same page, you state that "in-band and
21 out-of-band are described differently in the 140
22 Patent versus IPMI", correct?

23 A. Yes.

24 (Exhibit No. 1001 identified for the
25 record)

1 BY MR. HEINTZ:

2 Q. Okay. How is in-band described in the '140
3 patent? And you can feel free, if you like, to look at
4 Exhibit 1001, which is the '140 patent that's in your
5 chat room.

6 A. So let me go to the '140 also.

7 So the in-band interface in '140 relates to a
8 network connection to the device to be managed, and
9 it's a network connection that supports both
10 applications that are running on the device to be
11 managed and connected to the internet, yeah. So -- so
12 and -- so exposed to the internet.

13 Q. Okay. So if I understand correctly, an
14 in-band connection as described in the '140 patent is a
15 connection to the internet that is used by applications
16 running on the managed server; is that right?

17 A. Yes.

18 Q. And that -- by "used by applications", that
19 would be understood to mean that applications exchange
20 user data with users outside the managed server via
21 that internet connection, correct?

22 A. I'm sorry. Can you repeat that again?

23 Q. Sure. Again, we're talking about in-band
24 communications. And we talked about applications on
25 the managed server using this internet connection.

1 And I'm asking whether that means that those
2 applications exchange data with users via that internet
3 connection.

4 A. Yes. Yeah, so -- yeah, it -- users or other
5 applications, yeah, on the internet.

6 Q. Okay. And then in-band communications is
7 used in the '140 patent to describe remote management
8 communications between the managed server and a remote
9 management console of some kind via that same internet
10 connection, correct?

11 A. My understanding, and POSITA understanding I
12 believe at the time, would be that it is to connect to
13 the remote managed server. And there could be multiple
14 possibilities. I think you're mentioning console, but
15 basically to be able to manage that server. The
16 in-band interface, my understanding is that it does not
17 require to have like a console also.

18 Q. Fair enough. And I'm sorry, were you done
19 with your answer?

20 A. Yes.

21 Q. Okay. Fair enough.

22 I was using the remote console as an example.
23 But one example in the '140 patent of in-band
24 communications is remote management communications from
25 a remote management console outside the managed server

1 to the managed server via the same internet interface
2 over which the applications exchange user data with
3 other things outside the server; is that fair?

4 A. Yes, it is.

5 Q. Okay. So the point is that there are remote
6 management communications and user data communications
7 interleaved or commingled on this same internet
8 interface, correct?

9 A. Network interface, yes.

10 Q. Okay. Network interface.

11 A. Yeah.

12 Q. Okay. So now I'm going -- let me rephrase
13 that. I'll start again.

14 Does IPMI disclose in-band remote management
15 communications with the BMC as in-band is used in the
16 '140 patent?

17 A. So it may be easier to go back to the
18 declaration and both maybe paragraph 64 and before, my
19 statement stating that the in-band, the term in-band in
20 IPMI is different from the meaning that we have for
21 '140. So let me -- maybe I can -- there are two
22 paragraphs maybe that can clarify what I'm trying to
23 say, and one is the -- in my summary of IPMI, just to
24 clarify that the IPMI in-band definition is something
25 different in the sense that there's really -- it does

1 not go to the network interface in the same way as '140
2 envisions.

3 Q. So I want to clarify what I'm asking you. I
4 understand your declaration says there's a difference
5 in the way that IPMI and the '140 patent uses the term
6 "in-band".

7 My question to you is using in-band in the
8 same way that term is used in the '140 patent, does
9 IPMI disclose in-band remote management communications
10 between the BMC and a remote management console?

11 A. So -- okay. Sorry. I see. So just to make
12 sure I'm clear, so the term in-band in IPMI does not
13 correspond to that because it is -- it is not -- it is
14 going through the operating system. In Figure 1.1, for
15 example, as I explain it, the -- and I'm going to come
16 back to the second part. I think you probably mean
17 maybe the out-of-band term in IPMI.

18 But the in-band -- so IPMI -- so I'm reading
19 paragraph 50 in my declaration. "It is important to
20 note that for the in-band mode IPMI requires that the
21 operating system is operating and running the
22 management application. Furthermore, as shown in
23 Figure 4, communication over the system interface
24 between the system management software and BMC uses
25 IPMI message formats and not internet protocol

1 packets".

2 And then in my declaration again in 64, "In
3 IPMI, in-band remote access management occurs through
4 the host operating system, using software agents that
5 communicate with the Baseboard Management Controller
6 local system interfaces. So these are hardware-level
7 communication channels between the CPU and BMC that
8 allow IPMI commands to be issued from within the
9 operating system. For the in-band mode, IPMI requires
10 the OS to be operating and running the management
11 application. Furthermore, as shown in Figure 4 above,
12 communication over the system interface between the
13 system management software and the BMC uses IPMI
14 Messages format and not Internet Protocol"

15 So the "in-band" term in IPMI does not -- you
16 know, shows same thing as '140. You might be -- if I
17 understood your question, you're saying is there any
18 other way that IPMI could be shared in-band. And like
19 I said in my declaration, what I could consider the
20 out-of-band, that's what I describe there, and the
21 out-of-band of IPMI -- let me go back to that.

22 Sorry.

23 So the IPMI has this out-of-band mode. Maybe
24 I'll go back to -- again, to paragraph 49. And there
25 Figure 4 shows the out-of-band interface of IPMI, and

1 that one allows connection between the -- coming over
2 the line over a side band to the BMC. And that is
3 called out-of-band in IPMI.

4 Q. Okay. I understand that that's called
5 out-of-band in IPMI. But nonetheless, is that not the
6 same type of communication that the '140 patent refers
7 to as in-band communication?

8 A. So one could at this high level yes, one
9 could consider that it shares similar aspects.

10 Q. All right. So let's take a look and be
11 clear.

12 (Exhibit No. 1020 identified for the
13 record)

14 BY MR. HEINTZ:

15 Q. So I'd ask you to open Exhibit 1020, which is
16 IPMI version 1.5.

17 A. I have it open.

18 Q. I ask you to go to Figure 1-2 in Exhibit
19 1020, which is native page 9 or Exhibit 1020 page 31.

20 A. All right.

21 Q. Can you let me now when you are there?

22 A. Yes, I am there.

23 Q. Okay. So in Figure 1-2, which is an IPMI
24 block diagram, there a LAN connector up in the upper
25 left-hand corner. Do you see that?

1 A. Yes.

2 Q. Okay. That is a connector that this device
3 illustrated in Figure 1-2 uses to communicate with the
4 internet, correct?

5 A. Yes.

6 Q. Okay. And IPMI tells us that management
7 communications from, for example, a remote management
8 console of some kind can enter the system through the
9 LAN connector, from there go to the box labeled network
10 LAN controller, and if those are management messages
11 they will be sent from the network LAN controller to
12 the BMC via the side-band interface shown in Figure
13 1-2; is that correct?

14 A. Yes, that is correct. That is, in fact, what
15 I also say in my declaration.

16 Q. Right. And that same LAN interface is also
17 used by the managed device to receive internet
18 communications that are destined for the system. For
19 instance, for the kinds of applications that run on the
20 system with remote users or other applications,
21 correct?

22 A. Yes.

23 Q. Okay. So that is the same exact use of
24 in-band that's discussed in the '140 patent, correct?

25 A. Yes.

1 Q. So despite the fact that IPMI might call that
2 out-of-band communications, if one were to use the
3 terminology of the '140 patent those would be in-band
4 remote management communications, correct?

5 A. Yes.

6 Q. Okay. Thank you.

7 A. So these are -- in fact, you -- as you read
8 my declaration, so I state that also.

9 Q. Yes. And I believe you state that in --

10 A. I state that in 49, paragraph 49.

11 Q. Yes. In paragraph 49. All right.

12 So while we're talking about paragraph 49 of
13 your declaration, you mention that "it is important to
14 note that the LAN Controller/side-band only allows
15 the detection and forwarding of a subset of IP/UDP
16 packets to the BMC and injection of BMC packets onto
17 the LAN", correct?

18 A. Yes.

19 Q. What is that subset of packets that the LAN
20 controller allows the detection and forwarding of to
21 the BMC?

22 A. So these are -- let me go back, sir, to my
23 statement. So these are the platform management
24 diagrams.

25 Q. Okay.

1 A. Maybe reading from my declaration, again
2 paragraph 49, "As Figure 12-1 shows, these incoming
3 platform management datagrams may also be delivered
4 to system software in parallel with being delivered to
5 the BMC. The BMC can use this same interface to inject
6 datagrams onto the LAN".

7 Q. Sure. And so the subset here is that not all
8 of the data that comes in via the LAN and to the LAN
9 controller is going to be forwarded to the BMC,
10 correct?

11 A. Yes.

12 Q. Okay. Now, in the sentence I read earlier in
13 paragraph 49, you refer to IP/UDP. Do you see that?

14 A. Yes.

15 Q. Okay. Does IP signify internet protocol?

16 A. Yes.

17 Q. Okay. And UDP is I believe user datagram
18 protocol?

19 A. Yes.

20 Q. Okay. So those packets that are forwarded
21 from the LAN controller to the BMC, those are internet
22 protocol or IP packets, correct?

23 A. Yes.

24 Q. Okay. So let me direct your attention to
25 paragraph 65 of your declaration again, I'm sorry,

1 which is Exhibit 2006.

2 A. Okay.

3 Q. Okay. There the first bolded sentence reads,
4 "a VPN tunnel carries internet protocol packets". Do
5 you see that?

6 A. Yes.

7 Q. Okay. Now, we just discussed that the BMC
8 will be receiving internet protocol packets via the
9 side-band interface from the network LAN controller,
10 correct?

11 A. Yes.

12 Q. Okay. So the statement you're making in
13 paragraph 65 about the use of a VPN tunnel being
14 impossible for things that are not internet protocol
15 packets, that doesn't apply to the internet protocol
16 packets that are being sent from the network LAN
17 controller to the BMC over that side-band interface,
18 correct?

19 A. My paragraph actually, if I read it fully, it
20 makes -- it still makes absolute sense, and I stand by
21 it. If you read it from beginning, it says
22 "Furthermore, within the context of IPMI in-band
23 remote access".

24 So this is the IPMI in-band as we discussed
25 earlier. In that context, then "a VPN tunnel carries

1 Internet Protocols on this" -- you know, that sentence
2 is still correct because IPMI in-band is not what you
3 just were discussing earlier. I think you're referring
4 to the out-of-band. My paragraph 65 refers
5 specifically to IPMI in-band.

6 Q. Right. And that paragraph 65 does not refer
7 to the -- what the '140 patent calls in-band
8 communications that are being sent to the BMC over the
9 side-band interface, correct?

10 A. There's a previous paragraph, 64, where I
11 discuss that.

12 Q. Okay. But paragraph 65 does not say that,
13 right?

14 A. No. 65 is, again, about IPMI in-band remote
15 access.

16 Q. And those IPMI in-band packets that you're
17 talking about in paragraph 65, they're sent from the
18 network LAN controller to the system via the PCI bus or
19 the system bus in Figure 1-2, not over the side-band
20 interface, correct?

21 A. Yes. These are IPMI in-band, yes.

22 Q. Okay. Now, in paragraph 64 you have a bolded
23 that reads "IPMI requires the OS to be operating and
24 running the management application". Do you see that?

25 A. Yes.

1 Q. Okay.

2 A. And they mean, again, just reading the full
3 sentence, "For the in-band mode, IPMI requires the OS
4 to be operating and running the management
5 application".

6 So that is my full sentence, yeah.

7 Q. Okay. And then you say "Furthermore, as
8 shown in Figure 4 above, communication over the system
9 interface between the system management software and
10 the BMC uses IPMI Messages format and not Internet
11 Protocol (IP) packets", right?

12 A. Yes.

13 Q. But that sentence is not referring to those
14 IP protocol messages that are being forwarded from the
15 LAN controller to the BMC over the side-band interface,
16 right?

17 A. No. Because that sentence says, "for the
18 in-band mode IPMI". So this is always that. But any
19 time I refer to in-band IPMI, I'm referring to in-band
20 as defined by the IPMI standard.

21 Q. Correct. And just so we're clear, because
22 you said "no" and it wasn't clear from context, what
23 you meant was no, that sentence in paragraph 64 does
24 not apply to the messages that are coming over from the
25 LAN controller to the BMC in IP-UDP format over the

1 side-band interface, correct?

2 MR. THEISS: Objection, form.

3 A. Okay.

4 Q. Correct, Dr. Noubir?

5 A. Can you repeat the question?

6 Q. Sure.

7 The sentence we read in paragraph 64 of your
8 declaration does not refer to the IP-UDP messages being
9 sent from the network LAN controller over the side-band
10 interface to the BMC, correct?

11 A. Yes, correct. It refers to the in-band of
12 IPMI.

13 Q. And those are the messages that are going not
14 over the side-band interface but rather over the PCI
15 interface to the OS. The PCI bus to the OS, correct?
16 I'm sorry. I didn't hear an answer.

17 A. Yes.

18 Q. Thank you, Dr. Noubir?

19 A. So these messages, I talk about them in
20 paragraph 66 I guess. The out-of-band because I cannot
21 recall these things. Out-of-band, yeah.

22 Q. Okay. In paragraph 67 of your declaration,
23 about in the middle of the paragraph you have a
24 sentence that reads "LAN Controllers have very limited
25 capabilities and are not capable of running

1 sophisticated software such as a VPN (e.g IPsec)". Do
2 you see that?

3 A. Yes.

4 Q. What kind of LAN controllers are you
5 referring to in that paragraph?

6 A. So these are -- I'm referring to typically
7 LAN controller that you'd find in the network
8 interface. So these are typically my controllers with
9 limited resources.

10 Q. Okay. Is the LAN controller illustrated in
11 Figure 1-2 a typical LAN controller?

12 A. Yeah. It seems so to me. I mean it has a
13 side band, but other than that it is fairly -- it could
14 be fairly typical I assume. I --

15 Q. How do -- sorry. Are you done with your
16 answer?

17 A. Yes, I am done.

18 Q. Okay. How do you know?

19 A. Because so in general -- so again, I'm
20 putting myself in POSITA 2004 looking at the IPMI
21 standard. I in fact -- so that is my understanding how
22 I would -- one would have read the -- this figure. If
23 there was some requirement to have more sophisticated
24 capabilities, it would have been I'd assume made more
25 explicit.

1 Q. Let me direct your attention to Exhibit 1020.
2 That's again, IPMI version 1.5. This time at native
3 page 27.

4 A. Page 27.

5 Q. Yes. Native page 27, which is exhibit page
6 49.

7 A. This is section 3, Baseboard Management
8 Controller, or --

9 Q. It's -- so in the lower right-hand corner you
10 should see a legend that reads Exhibit 1020-page 49.
11 And then the native page will be 27.

12 A. Okay. So I am on PMI, and I am on page 27.
13 Okay. I see here the section 3, Baseboard Management
14 Controller.

15 Q. I think you're on the wrong page still. So
16 how about try PDF page 49 at the top of the page. It
17 reads "in addition, BMC may implement additional
18 functions for messaging and alerting included". Is
19 that what you see at the top of the page you're looking
20 at?

21 A. No, I don't see that. Sorry. But let me
22 maybe re-download the document just in case.

23 Q. Okay. So we're clear, the document is
24 Exhibit 1020. And maybe to help you I'll share my
25 screen, and maybe that will facilitate you finding the

1 right spot.

2 Can you see my screen, sir?

3 A. No, but --

4 Q. How about now?

5 A. Yes, I do see it.

6 Q. All right. Do you see on the bottom of the
7 page it says "Exhibit 1020-page 49"?

8 A. Yes.

9 Q. And then native page 27, and that's PDF page
10 49. That's what you should see at the top of the page.

11 A. Yes, I see here.

12 Q. Okay. So so we're clear, you are now on
13 exhibit page 49 of Exhibit 1020, correct?

14 A. Yes.

15 Q. And then do you see a heading on the
16 left-hand side that reads "LAN interface"?

17 A. Yes.

18 Q. And if you look down, it says in the last
19 full sentence that "if the network controller is shared
20 between system software and the BMC, this is generally
21 accomplished via special hardware in the network
22 controller that enable BMC traffic and system traffic
23 to be interleaved". Do you see that?

24 A. Yes, I do see it.

25 Q. And it is the case in Figure 1-2 where the

1 LAN controller is sending some data over the side-band
2 interface to the BMC that we are talking about a shared
3 network controller, correct?

4 A. Yes.

5 Q. Okay. And this is stated -- the special
6 hardware sentence is stated directly in IPMI, correct?

7 A. Yes.

8 Q. Okay. All right. Sir, I'm going to -- you
9 can close that exhibit for the time being, and I'm
10 going to put a new exhibit -- actually, I'd ask you to
11 look at the '140 patent again. And this time I'll ask
12 you to look at Claim 1 of the '140 patent. That's
13 Exhibit 1001. Just let me know when you are there.

14 A. I am there.

15 Q. Okay. So Claim 1 at approximately column 22
16 line 48 recites at least one virtual management
17 interface connection means. Do you see that?

18 A. Yes, I do see it.

19 Q. Okay. The '140 patent describes a virtual
20 management interface as something that logically
21 separates management traffic from user data traffic
22 when the management traffic and user data traffic will
23 both travel over a common data connection. And that's
24 at column 11, line 63 to 67 of the '140 patent; is that
25 right?

1 A. Yeah, that is correct.

2 Q. Okay.

3 A. It also provides more specifics about what
4 the VMI is supposed to do, including the VPN, the
5 firewall, and so on in the description.

6 Q. Okay. And so for ease today Virtual
7 Management Interface is abbreviated as -- or can be
8 abbreviated as VMI, correct?

9 A. Yes.

10 Q. Okay. If I use VMI today, you'll understand
11 I'm referring to a virtual management interface,
12 correct?

13 A. Yes.

14 Q. All right. Now I'm going to direct your
15 attention to column 12 line 9 to 13 of the 140 patent.
16 Are you there, Dr. Noubir?

17 A. And you said which line?

18 Q. Let's start at column 12 line 9.

19 A. Yes.

20 Q. Okay. The first full sentence on line 9
21 begins "In a preferred exemplary embodiment of the
22 current invention, the VMI will utilize a Virtual
23 Private Network (VPN) mechanism such as IPsec to
24 encrypt, protect and logically separate the management
25 traffic before the traffic is passed to the user

1 interfaces". Do you see that?

2 A. I do.

3 Q. Okay. And the '140 patent also states -- I'm
4 sorry. Let me direct your attention to column 6 lines
5 37 to 39.

6 A. Which line?

7 Q. Column 6 lines 37 to 39.

8 That passage says that "the SMACC chipset
9 implements the logic to Support VPN tunnels", correct?

10 A. Yes.

11 Q. Okay. And then if you look at column 6 lines
12 31 to 33, okay, it says there that it's the VPN that
13 performs the logical separation of management traffic
14 from user data traffic, correct?

15 A. One second.

16 So here -- so the true text is if you read
17 maybe a little bit more you see -- maybe I'll go back
18 to my declaration what I'm saying there, but it says
19 the -- it also says the VMI utilizes -- and this is
20 column 6, line 26 -- "The VMI utilizes existing and
21 developing technology such as VPN to build secure
22 tunnels between the SMACC chipset and the management
23 center.

24 So here, '140, and the -- and maybe I should
25 go back also to my declaration where I talk about these

1 things, POSITA would understand that the VPN is
2 provided by a combination of VMI, SMACC, the -- yeah.
3 So it is provided by this combination of the two.

4 If you go also down a little bit on column 6
5 you see that. "The SMACC chipset implements the logic
6 to support VPN tunnels to the management center, thus
7 protecting the management traffic between the
8 management interface on the SMACC (VMI or SMACC
9 interface) and the management center".

10 So, okay.

11 Q. Dr. Noubir, you seem to be skipping around
12 and not addressing the questions I'm asking. Okay?

13 A. Sorry. Please can you --

14 Q. You don't have to read your entire
15 declaration. That's testimony. It's in the case
16 already. Nothing I can say today is going to make that
17 testimony go away. You reading it again isn't going to
18 help. I asked you what I thought was a simple
19 question. The question was at column 6 lines 31 to 33,
20 the '140 patent states that the VPN technology is what
21 provides the logical separation of the management
22 traffic from the user data traffic, correct?

23 A. So I'm just saying that I'm reading the full
24 column 6, and it -- and maybe I should take some time
25 and read a little bit more carefully, but it says also

1 a VMI is also established for logically separating
2 management traffic from user data when the in-band data
3 is to be used and so on.

4 So the '140 states explicitly that the VMI
5 does have logical separation and that the VMI uses a
6 VPN. That is, like I said, line 26, "the VMI utilizes
7 existing and developing technology such as VPN to build
8 secure tunnels between the SMACC chipset and the
9 management center".

10 And maybe just to understand the -- a VPN --
11 so this VMI that virtualizes these user interfaces, a
12 POSITA would understand it is the one that would
13 provide the -- that -- you know, the VPN end point
14 tunnel, tunnel end point to provide that virtual
15 interface to the chipset. And this is how it's
16 traditionally done. You have some entity that will
17 provide to the higher layers this -- this virtual
18 interface. I mean, I'm talking about specifically in
19 VPNs to higher layers.

20 Q. And just so we're clear, the VPN -- sorry --
21 the VMI provides logical separation, but the way it
22 does it is by using a VPN. And that's what's discussed
23 in column 6 in those two passages we just read,
24 correct?

25 A. Yes. And -- but to do it, it needs to

1 terminate the VPN tunnel so that it can tell what is
2 management and what is not.

3 Q. Fair enough. At column 6 line 63 to column 7
4 line 5 it again says the same thing, that it's the VPN
5 that's providing this logical separation of the
6 management data from the user data, correct?

7 A. Yes.

8 Q. Okay. So if I have --

9 A. Sorry. Excuse me one second. So yes in the
10 sense that the VMI is the one that does separation, but
11 it uses the VPN to be able terminate the tunnel so it
12 can tell what is, you know, management and what is not.
13 So what you're saying is sometimes correct but it's
14 not -- you know, it -- I just want to make sure that
15 you're providing a clear picture of all the elements of
16 this.

17 Q. Well, what I want to understand from you is
18 what more is it in a VMI other than the use of a VPN
19 that's required to provide a logical separation of data
20 from the user and data for management? In other words,
21 what is this VMI other than a VPN?

22 A. So the VMI is defined as with this capability
23 of logically separating, and I'm just kind of inferring
24 from the 140, and it makes use of the VPN. So it is
25 this combination of the two things. First you would

1 need something like a VPN which has various kind of
2 aspects to it. It is connected to multiple user
3 interfaces, so it get all of them, and then it
4 terminates the VPN it -- and then as it terminates it
5 it's able to -- to separate the management data from
6 the user data.

7 Q. All right. How about this. If I have a VPN
8 setup between the SMACC chipset and the remote
9 management console, okay, a point-to-point VPN, do I
10 have a virtual management interface or do I need
11 something more than that?

12 A. So you'd need -- so I'm sorry. Can you
13 explain how would you -- so what do you mean by the VPN
14 setup and where?

15 Q. All right. Maybe I can help you understand
16 the nature of my question by referring back to your
17 declaration.

18 Okay. So let's go to paragraph 56 of your
19 declaration, which again is Exhibit 2006. Let me know
20 when you are there.

21 A. I'm there.

22 Q. Okay. Five lines up from the bottom of that
23 paragraph 56 you have a sentence that reads "the
24 virtualized user interfaces, in combination with the
25 logic to support VPN tunnels, enable the SMACC to

1 separate management data from user data in locations
2 where they are co-mingled within the device, and kept
3 securely separated during transit to a remote
4 administrator computer".

5 You see that, right?

6 A. Yes, I do see it.

7 Q. Now, we just read several passages in the
8 '140 patent that says it's the VPN that does the
9 logical separation of data. Again, if you look at
10 column 7 lines 1 through 3 it says, "the VPN tunnels
11 provide for logical separation of the management
12 traffic from any other traffic utilizing the network".

13 So what I'm trying to understand from you,
14 Dr. Noubir, is I read the patent and it seems to say
15 it's the VPN that provides a logical separation. Your
16 declaration in paragraph 56 seems to says it's the
17 virtualized user interfaces in combination with the
18 logic to support the VPN tunnels. I'm trying to fine
19 out if there's something more to a virtualized
20 management interface than a VPN or not.

21 MR. THEISS: Objection, form.

22 BY MR. HEINTZ:

23 Q. So can you answer that question?

24 A. So the -- just to maybe -- if you go back to,
25 for example, Figure 3 of '140, you'll see that the VMI

1 is connected to multiple user interfaces. It's -- the
2 '140 explicitly says that the VMI uses the VPN, which
3 means it will as a component you would have a VPN, but
4 it is not sufficient to handle multiple user
5 interfaces, have the logic to be able to separate --
6 implement this logic that separate the different --
7 what is management from what is not.

8 So my -- my declaration reflects what the --
9 the POSITA at the time will have understood is that
10 you'll have this VMI that will be there getting data
11 from user data interfaces, will be implementing the
12 VPN, and will work with the SMACC to be able to do that
13 logic, that separation.

14 Q. All right. You say in your answer that if I
15 have a VPN that's a component of what I'll need, but
16 I'll need something else to be able to accomplish this
17 function of separating the user data in the management
18 data. Can you please tell me exactly what this
19 something else is?

20 A. So you would have a -- first of all, you need
21 to be able to access multiple user interfaces. So
22 unify all of them. Typically a VPN would run on one
23 user interface. Second, once you have that VPN, on
24 some of these user interfaces you -- that is
25 terminated. Typically you'd have some IP address,

1 either there -- that connects on the other side.

2 Then out of that -- what you have is that you
3 have data coming on the VPN, data that's maybe not
4 coming out of VPN, and you need some logic, some piece
5 of hardware/software that would be able to make some
6 kind of decisions about let's say this VPN is giving me
7 this IP address for management traffic, but then I have
8 other data coming on this user interface. I need to,
9 you know, separate them. VPN intrinsically gives you
10 tunnel from one end point to the other.

11 Q. Okay. So if there's a VPN established
12 between the SMACC chipset and a remote management
13 console, isn't it typical that those packets that are
14 part of that VPN tunnel have a different port address
15 from user data packets that are going to be used by the
16 system?

17 A. Yeah, they would in principal.

18 Q. Yeah. And so is this extra logic or extra
19 component you're talking about something that just
20 recognizes the port number, and then based on the port
21 number sends the information to the SMACC chipset
22 rather than to one of the applications in the device?

23 A. Typically, I mean you would need to also be
24 able to -- let's say when you set up a VPN you might
25 set it up with different encryption algorithms. You

1 know, there are various kind of things that you would
2 have there. And you -- so here in this specific
3 context you need some additional logic that would look
4 at the -- what needs to go to the SMACC and what would
5 go somewhere else. I think --

6 Q. That additional logic has nothing to do with
7 encryption, right? Because you don't need to be able
8 to decrypt the packet to know what port they're being
9 directed to, do you, sir?

10 MR. THEISS: Objection, form.

11 A. So the -- the -- so if you -- I mean if you
12 repeat your question, I guess you're asking if that
13 additional logic --

14 Q. I'm asking if the additional logic user
15 discussed needs to be able to decrypt the packets in
16 order to determine whether those packets are destined
17 for the BMC because they're management data or whether
18 they're destined for some user application on the
19 system.

20 A. In principal they would, they -- they could,
21 but they don't necessarily have to because it all
22 depends on what's -- you have on board.

23 Q. Yeah. So I'm still struggling trying to
24 understand what it is that is in addition to a VPN
25 that's necessary in order to constitute a VMI as

1 discussed in the patent. And I'm not understanding
2 what specific functions and what specific hardware or
3 software you're talking about. So can you please
4 identify that for me?

5 A. Let me just go back to my declaration. And I
6 said it is -- what the '140 teaches -- so the -- maybe
7 let me go to paragraph 55 as -- so "In support of the
8 Claim feature requiring logical separation of
9 management data from user data the 140 Patent
10 explicitly describes a SMACC chipset that has the logic
11 to support VPN tunnels, or, more specifically,
12 transmission tunnels to protect management
13 communications".

14 In '140 SMACC can also include the firewall
15 to protect SMACC from unauthorized access. So this VMI
16 SMACC, they have the VPN but additional logic. And one
17 example, it was in -- the capability to separate which
18 is a capability, but also has this capability to do
19 firewalling which is more advanced.

20 So the range of possibilities you have, but
21 the minimum is to be able to accept multiple user
22 interfaces, terminate the VPN, and then provide this
23 logic that does these separations and maybe additional
24 things like firewalling. So ...

25 Q. All right. Does that complete your answer?

1 A. Yes.

2 Q. Okay. So the first thing you referred to in
3 that long answer was a firewall.

4 Now, the passage that you read in your
5 declaration, which comes from the patent, says that the
6 SMACC can also include a firewall.

7 Is a firewall a necessary requirement in
8 order to have a VMI?

9 A. So let me just maybe remember based on the
10 word "can" it would mean not required. But let me just
11 double-check one thing.

12 So if you look at column 6 line 34 it says,
13 "Another primary function of the SMACC is to protect
14 the management interfaces from attack. This is
15 accomplished through a combination of firewall, VPN,
16 and authentication and authorization applications".

17 So here it says that it is a primary function
18 to have the firewall.

19 Q. So does that mean that a firewall is a
20 necessary component of a VMI according to your opinion?

21 A. It seems to me that it is a primary function.
22 So it would be -- so it is to do the protection, and
23 they're teaching how to do it through a combination
24 firewall or VPN. So I assume that from that is a --
25 that it's teaching to do this protection with a

1 combination firewall and VPN.

2 Q. Okay. So that's -- we made progress. I now
3 know that in your opinion in order for there to be a
4 VMI I need a VPN and I need a firewall, correct?

5 A. It seems to me that the '140 teaches that to
6 do the protection yes, you need VMI, you need the
7 firewall, and you need the VPN, yes.

8 Q. Okay. Now, in your answer you also talked
9 about in addition to the requirement for a firewall
10 there is at a minimum you said "to be able to accept
11 multiple user interfaces".

12 What software or hardware or combination of
13 the two does the '140 patent identify as performing
14 that function?

15 A. So from the '140 it seems that this
16 combination of hardware, software is provided to the
17 VMI, SMACC. And I'm reading from column 6 -- I'm
18 sorry.

19 So -- so reading 140, what one would
20 understand is that it is provided by the VMI but
21 working together with the SMACC, meaning that maybe
22 some functionality might be moved to the SMACC.

23 Q. So what is the -- okay. The functionality is
24 accepting multiple --

25 A. Sir --

1 Q. Hold on. Let me get the question out.

2 You say a primary function -- let me withdraw
3 that and start again.

4 Actually, you know, we've been going for more
5 than an hour now. Why don't we take a ten-minute
6 break, and come back after the ten minutes are up.

7 (Brief recess taken)

8 BY MR. HEINTZ:

9 Q. So Dr. Noubir, before we left I was trying to
10 determine what were the components of a VMI that are
11 necessary beyond VPN. You've already identified a
12 firewall. One of your early answers to my question was
13 at a minimum the VMI must be able to accept multiple
14 user interfaces and terminate the VPN. Do you remember
15 that testimony?

16 A. Yes.

17 Q. Okay. So let's start with the VMI must be
18 able to accept multiple user interfaces.

19 When you say "multiple user interfaces", are
20 you talking about physical interfaces or some other
21 kind of interface?

22 A. I'm talking about physical in the sense of
23 like network interfaces and things like that, yes.

24 Q. So it's -- and in Figure 3 of the '140 patent
25 which you referred me to earlier, there is a block

1 labeled "user data interface" in the lower left corner.

2 Do you see that?

3 A. Yes.

4 Q. That's a physical interface, correct?

5 A. Yes, I would assume so.

6 Q. So it's your belief that in order for it to
7 be a VMI you must have multiple ones of those physical
8 user interfaces; is that correct?

9 A. I mean, at least one of course. But the
10 diagram shows more than one. So the understanding is
11 that the VMI should be able to support more than one.

12 Q. So that's not a requirement, in your opinion,
13 of a VMI?

14 A. Yes.

15 Q. Okay. And when you say "accept", what do you
16 mean?

17 A. I mean that it is -- it will connect to in
18 some form, meaning that there is some hardware
19 connection, and it would have a combination of like
20 hardware logic software logic to -- to ultimately
21 virtualize these kind of interfaces to make them
22 available to the SMACC. For example, maybe I can give
23 an example.

24 If you take a network interface, you -- so
25 you -- so like an ethernet interface. So that's like

1 physical interface. And then you can have -- you could
2 imagine having more than one. Then they're connected
3 with this VMI that can -- you know, that can receive
4 and send over them and configure them and so on.

5 Q. Okay. So I understand from you that the VMI
6 must have the ability to connect to multiple physical
7 network interfaces and must have a firewall. You also
8 said that it must have the ability to terminate the
9 VPN.

10 Is there anything else that's required for a
11 VMI in your opinion?

12 A. Let me think one second. So of course it
13 needs to be able to provide the fundamental function as
14 described in the '140 patent to be able to do that
15 logical separation, which means it needs to have some
16 hardware/software capabilities to analyze these and
17 make these decisions. So it is -- my understanding, it
18 is a software/hardware capability to do that logical
19 separation.

20 Q. Well, sir, we just discussed that the '140
21 patent tells us right at the top of column 7 that it is
22 the VPN tunnels provide for logical separation of the
23 management traffic from any other traffic utilized in
24 the network. So if the VPN tunnels are providing that
25 logical separation, are you saying there's yet still

1 something else needed that's required for a VMI to
2 provide this logical separation?

3 A. Yes. Yes. The VMI utilizes the VPN and has
4 some logic in the software/hardware logic to be able to
5 tell what goes where. And based on -- yeah.

6 Q. And where is this extra logic described in
7 the '140 patent?

8 A. So the -- in my opinion, it is described in
9 the following way: the VMI has to provide the logical
10 separation, and the VMI utilizes the VPN. But the VPN
11 does not have the capability to separate. So you need
12 something in addition to the VPN to be able to make
13 that separation.

14 Q. Is that something exactly as described in the
15 '140 patent?

16 A. One would understand it is at least some
17 software that can set up the VPN tunnel, and then
18 receive these IP packets on that tunnel and decide, you
19 know, what to do with the -- what is management and
20 what is not.

21 Q. Okay. And I think we discussed earlier that
22 a typical way in which a VPN is implemented is that the
23 packets that are associated with that VPN tunnel have a
24 different port number than other user data packets that
25 are not associated with the tunnel; is that correct?

1 MR. THEISS: Objection. Form.

2 A. So the -- once you have the -- so the VPN
3 provides a network interface. Once you, you know, the
4 end point of the tunnel decrypts the IP, let's say,
5 here if it's an IPsec packet, decrypt, checks the
6 integrated protection and so on, you will end up with
7 the encapsulated IP packet. So the -- so on that
8 tunnel you'd have combination of packets going through
9 possibly different ports and so on. The other packets
10 coming on that network interface can -- I mean but
11 don't have necessary but can have -- you know, can
12 be -- targeted to different ports and have maybe
13 different protocols on them.

14 Q. All right. Just before we leave this topic,
15 is there anything else that's required for a VMI in
16 your opinion?

17 A. I think it seems fine to me. I don't recall
18 anything in addition to this.

19 Q. Let's turn to paragraph 33 of your
20 declaration. Again, that's Exhibit 2006. Sir, I'm
21 just going to ask you to just talk up a little bit. I
22 think with your microphone there, sometimes you say
23 things that it's just not loud enough to cross the
24 threshold to be detected.

25 A. I'm sorry. I will speak louder.

1 Q. Okay. Thank you, sir.

2 So starting at paragraph 33 you begin a
3 discussion of VPNs, correct?

4 A. Yes.

5 Q. Okay. Now in this discussion, in your
6 declaration starting at paragraph 33 and continuing
7 through paragraph 36, you never mention a
8 point-to-point VPN; is that correct?

9 A. So what do you mean by point-to-point VPN.

10 Q. Are you not familiar with the term
11 point-to-point VPN?

12 A. Well, point-to-point has a meaning. I
13 described different types of VPNs. I guess you're
14 referring maybe to either the VPN I'm describing in
15 Figure 2 which basically says you have a -- the VPN
16 between these two -- I'm sharing them between two
17 routers. So -- or are you referring to a VPN between
18 two devices directly?

19 Q. Yes, I'm referring to the latter. Do you
20 discuss those kind of VPNs in your declaration?

21 A. Let me read again what I wrote here. I wrote
22 what I felt was relevant to this, but let me see if I
23 refer to this. One second. VPN.

24 So I'm not -- so here I did not -- I mean,
25 there are a few other variations that are not

1 necessarily used. If you look at -- I'm going to
2 explain IPsec and its different modes like transport
3 and tunnel mode and so on. But the -- it is -- if by
4 point-to-point VPN you're referring to two basically
5 computers running the VPN between them directly, it is
6 a possibility. I'm not showing it here because it is
7 -- it seemed to be less relevant to explaining the '140
8 and other.

9 Q. I see. Sir, you read Dr. Meldal's
10 declaration in this IPR, did you not?

11 A. So I don't -- I don't think I read it. Yeah,
12 I read the -- I went through the petition itself, but
13 so -- at some level, but I don't think I read that in
14 detail.

15 (Exhibit No. 1046 identified for the
16 record)

17 BY MR. HEINTZ:

18 Q. Okay. Well, let's take a look now at Dr.
19 Meldal's declaration. I put it in the chat room. It
20 says IPR2024_00124 Meldal declaration. Can you open
21 that for me? Are you able to find it in your chat?

22 A. Yes, I did find it.

23 Q. Are you able to open it now?

24 A. Yes.

25 Q. Let's go to paragraph 111. Let me --

1 withdraw that question and start again.

2 The first page of the Meldal declaration,
3 which is Exhibit 1046, indicates that this is a
4 declaration in IPR 2024_00124 for the '140 patent,
5 correct?

6 A. Yes.

7 Q. Okay. Seeing this cover page, does this
8 refresh your recollection of whether you looked at
9 Meldal's declaration?

10 A. I looked at the petition itself, and so I'm
11 not -- so let me -- and if this is the -- if this is
12 the petition that I would have looked at, if I'm not --
13 maybe I'm confusing the petition and declaration.

14 Q. I can tell you, sir, it's not the petition.

15 A. Okay.

16 Q. The petition is a different document.

17 A. So -- yeah, so I don't think I had this
18 document.

19 Q. Okay. So let's go to paragraph 111 of the
20 Meldal declaration. That's again, Exhibit 1046. And
21 if you'd just let me know when you are there, sir.

22 A. Okay.

23 Q. So in paragraph 111 you see a discussion
24 about a point-to-point VPN with tunneling
25 functionality, correct?

1 A. Should I read paragraph 111?

2 Q. You can read it, but I'm just asking you if
3 you see the reference there to a point-to-point VPN
4 with tunneling functionality. That's on the third and
5 fourth line.

6 A. So yes, I see that there's a reference to
7 point-to-point VPN with tunneling functionality.

8 Q. Okay. And since you haven't seen this
9 document before, let me direct your attention to the
10 petition instead. So I will put the petition for the
11 '140 patent IPR in your chat room. That should be
12 there momentarily. Let me know when you have it open,
13 and I'll direct you to what place to look at.

14 A. Okay. I have it open.

15 Q. Okay. Go to page 33 of the petition if you
16 would, Dr. Noubir. Do you see that?

17 A. Yes. I'm at 33.

18 Q. Okay. The first full paragraph reads, a
19 POSITA would have found -- sorry. Let me try it again.
20 I apologize.

21 "A POSITA would also have found obvious the
22 requirement in limitation [1.c] for providing logical
23 separation of management data from user data because a
24 POSITA would have found it obvious to utilize a
25 point-to-point VPN with tunneling functionality on

1 Neufelds managed server 2 via the in-band connection
2 used for non-management user traffic (i.e., the NIC 110
3 and network N) in order to provide for a dedicated VPN
4 for communications of management data with the remote
5 management PC 5". Do you see that?

6 A. Yes.

7 Q. Okay. So this is a portion of the petition
8 that you read, correct?

9 A. Yes.

10 Q. And just for the record, when I said POSITA,
11 that's P-O-S-I-T-A, and when I said Neufeld, that's
12 N-e-u-f-e-l-d. Okay?

13 A. Yes.

14 Q. So you mentioned to me earlier, Dr. Noubir,
15 that you didn't mention anything about point-to-point
16 VPNs in your declaration because you didn't think that
17 was relevant.

18 Were you not aware that the petition was
19 stating that it would have been obvious to utilize a
20 vpn with tunneling functional according to Neufeld's
21 system?

22 A. I do not think that this -- maybe let me
23 explain a few things about VPNs and IPsec.

24 So if you take IPsec, which is one of
25 standards that provides VPN functionality it has like I

1 mentioned two modes. One is transport mode and one is
2 tunnel mode. In fact, the tunnel mode in IPsec, which
3 is the IETF standard for VPNs, is the one between two
4 gateways.

5 So here, a point-to-point VPN with tunneling
6 functionality on Neufeld, there are several kind of --
7 I have like several issues maybe with this. Because
8 Neufeld has his own kind of, you know, definitions and
9 issues and so on. So let me just see, you know, little
10 bit -- give me maybe a few seconds to think little bit
11 point-to-point VPN in this context.

12 So the -- so that statement, maybe I would
13 switch it to talk about Neufeld, would not, you know,
14 make sense. Because in Neufeld, the in-band
15 connection, the -- so my understanding of Neufeld, if
16 you read it carefully, it is mostly about the auto band
17 communication. The in-band in reference to NIC 110,
18 that would not be possible to run a VPN end point
19 there.

20 So the point-to-point VPN, like I showed in
21 my explanations of VPN what I felt relevant to the fact
22 that how Neufeld thinks of VPNs, and Neufeld thinks of
23 VPN, it's mentioned twice, and it is thinking of it the
24 way I was explaining it. So ...

25 Q. Does that complete your answer?

1 A. Yes.

2 Q. So if you look further down on page 33 of the
3 petition you see a reference to L2TP/IPsec being used
4 to create a secure L2TP tunnel protected by IPsec,
5 correct?

6 A. Yes.

7 Q. Okay. Was L2TP a well-known VPN technology
8 at the time of the '140 patent?

9 A. Yes, it was.

10 (Exhibit No. 2009 identified for the
11 record)

12 BY MR. HEINTZ:

13 Q. Okay. In fact, if you look at Exhibit 2009,
14 which is something you cited in your declaration, and
15 in particular look at page 23, you'll see L2TP/IPsec
16 there, correct?

17 A. And in fact, L2TP typically between a
18 computer, so a running client, connecting to a gateway,
19 which is the VPN I showed in my declaration.

20 Q. Let's go back to your declaration at Figure
21 3. So this is the figure that's right above paragraph
22 36 of your declaration, which again is Exhibit 2006.
23 Do you see that?

24 A. Okay.

25 Q. So in Figure 3 on the right-hand side we see

1 a VPN tunnel that terminates at a client computer,
2 correct?

3 A. Yes.

4 Q. Okay. Now in Figure 3, the other end of the
5 tunnel on the left-hand side is connected to a VPN
6 gateway, correct?

7 A. Yes.

8 Q. Was it possible to have a VPN tunnel between
9 two client computers going through the internet at the
10 time of the '140 patent?

11 A. Yes, it is possible.

12 Q. And a des -- the description of that that one
13 might use would be a point-to-point VPN tunnel,
14 correct?

15 A. So in the context of IPsec that -- that is
16 called transport mode via -- and you can have that.
17 This -- the -- so yes, you can definitely run VPN
18 between two clients.

19 Q. And a way to describe that to a person who's
20 skilled in the art would be a point-to-point VPN,
21 correct?

22 A. So you couldn't say that, yeah.

23 Q. Okay. And such an L2TP -- let me rephrase
24 that.

25 Such a point-to-point VPN could also be used

1 with IPsec for communication, that's I-P-S-E-C, right?
2 I'm sorry. Let me withdraw that again. It's been a
3 long day already.

4 Such a point-to-point VPN tunnel could
5 include encryption technology such as IPsec to encrypt
6 the communications via the tunnel, correct?

7 A. Yes, you could have a VPN tunnel between two
8 computers.

9 Q. Okay.

10 A. Rare, but you could.

11 Q. Now, we talked about Neufeld earlier, and I
12 have a question for you.

13 Is it your position that Neufeld only
14 discloses communications between the remote management
15 PC5 and the RMC 116 via the management network M even
16 when the OS of the managed server is running?

17 A. Let me just think about the question. It's a
18 long question.

19 Q. Sure. Would it help you to see the Neufeld
20 patent? Would that help your --

21 A. Sure. And if you could repeat your question
22 while I'm opening the Neufeld patent.

23 Q. Sure. I don't think I have it in the room
24 yet, but give me a moment and I'll have it there for
25 you. Okay. I've sent it, so I believe you'll have the

1 Neufeld patent now.

2 MR. THEISS: And just for the benefit of the
3 court reporter, Neufeld is Exhibit 1005.

4 MR. HEINTZ: Thank you.

5 (Exhibit No. 1005 identified for the
6 record)

7 BY MR. HEINTZ:

8 Q. Dr. Noubir, do you have it?

9 A. Yes, I do have it.

10 Q. Okay. Would you like to look at it for a
11 moment, and then I'll ask my question again?

12 A. You can ask your question.

13 Q. My question is is it your position that
14 Neufeld only discloses communications between the
15 remote management PC5 and the RMC 116 via the
16 management network M, even when the OS of the managed
17 server is running?

18 A. So for this maybe I can read from my
19 declaration because this was something that I spent
20 some time thinking about due to the fact that Neufeld
21 has several inconsistencies in it. So I can go back to
22 read, but just to provide some context why I'm saying
23 there's inconsistencies, if you look at Neufeld, in
24 fact, the claims have nothing to do with this. They
25 are more about managing privileges and the

1 authentication levels and so on.

2 In the description itself it talks about --
3 and the reason I'm going into detail is just to clarify
4 a little my answer so it's accurate. So it talks about
5 auto band and in-band communication. But it says
6 several things to indicate that it -- that only the
7 out-of-band is of interest. And I can maybe -- can
8 read a little bit maybe.

9 So first of all, so it says that -- so in my
10 paragraph 45 I say "Neufeld also distinguishes between
11 in-band and out-of-band communications. For example,
12 Neufeld states Remote management tools can communicate
13 with a managed server using either in-band
14 communication or out-of-band communication. In-band
15 communication refers to communicating with the server
16 over a standard network connection, such as the managed
17 servers normal Ethernet connection. In-band
18 communication with the server is, accordingly, only
19 possible when the server is able to communicate over
20 its normal network connection. Practically speaking,
21 this limitation restricts in-band communication to
22 times when the OS of the managed server is
23 operational".

24 So a POSITA would understand that, yes, that
25 if the -- that the disclosure is about, you know -- is

1 about out-of-band communication.

2 Q. I'm sorry. I thought you were reading about
3 in-band communication in paragraph 45.

4 A. Yeah. But here what it say -- I mean, this
5 paragraph is saying that basically the in-band
6 communication -- so again, I'll read just the last
7 sentence. "Practically speaking, this limitation
8 restricts in-band communication to times when the OS of
9 the managed server is operational".

10 Q. My question to you was at times when the OS
11 is operational, does Neufeld disclose communication of
12 management information between the RMC 116 and the
13 management PC5 via network N or is it only the other
14 network, network M, the management network?

15 A. So I can read -- so a POSITA based on -- and
16 I'll read paragraph 34 where I think I also mention
17 that in my declaration, is that the -- the -- what
18 Neufeld talks about -- okay. So reading paragraph 34,
19 and reading line -- so reading -- okay. So the managed
20 server includes special circuitry and software for
21 capturing, analyzing, compressing and transmitting
22 video.

23 Q. I'm sorry, Dr. Noubir. Where are you reading
24 exactly?

25 A. From Neufeld, paragraph 34.

1 Q. Okay. Please proceed.

2 A. So it says that "The managed Server 2
3 includes Special circuitry and Software for capturing,
4 analyzing, compressing and transmitting video activity
5 to the remote console independent of an operating
6 system. The special circuitry and software operate
7 without regard to the existence or type of OS present
8 in the managed server. Therefore, the present
9 technique may be useful for accessing, interacting,
10 and/or monitoring the managed server from the remote
11 console 5 even before its OS has been loaded".

12 So -- which means that if this mechanism that
13 they presented is not reliant, is independent, does not
14 need the operating system but the in-band requires the
15 operating system, therefore what they're teaching is
16 not going through the in-band because for the in-band
17 to work you need the operating system. But here they
18 say the operating system is not existent, does not have
19 to exist.

20 Q. All right. So let's -- let's get a little
21 ground work done, and we'll try to go back to this
22 question.

23 So in Figure 1 of Neufeld you see there's a
24 network N, as in Nancy, and a network M, as in Mary,
25 correct?

1 A. Yes.

2 Q. Okay. So out-of-band communications in the
3 context of Figure 1 are communications between the
4 managed server over network M and the remote management
5 PC, correct?

6 A. Yes.

7 Q. Those are out-of-band connections over
8 network M, as in Mary?

9 A. So -- yes. So the out-of-band communication
10 is over the management network M.

11 Q. Correct. Now the other network, network N,
12 as in Nancy, that would be in-band remote management
13 communications if communications between the managed
14 server and the remote management PC5 were to occur,
15 correct?

16 A. Yes.

17 Q. Okay. So my question to you was, is it your
18 position that even when the OS is up and running that
19 there are no remote management communications conducted
20 between Neufeld's managed server 2 and Neufeld's remote
21 management PC5?

22 A. So my position, and I believe what -- how
23 POSITA -- and this is basically how POISTA would have
24 understood it at the time, is that -- so that reading
25 Neufeld there are several inconsistencies. So that

1 makes it -- the only thing that would really make
2 sense, I mean the first level of making sense, and I go
3 into this in my declaration, is that it is over the
4 out-of-band network how these things would work as I
5 explained before. But -- and maybe I should read for
6 -- just to make sure that -- I tried to make sense of
7 Neufeld. As I mentioned, it has multiple things that
8 don't make sense. And maybe I should read from my
9 declaration because that's, you know, wording that I
10 spent some time on.

11 Q. You don't need to do that, sir. I've told
12 you before. Your declaration is already of record in
13 the testimony. This is cross-examination. I'm not
14 going to -- you don't need to repeat what you've said,
15 okay?

16 A. Okay. So the -- so Neufeld has
17 inconsistencies. What will make sense is to go over
18 the management network. There are mentions somewhere
19 in Neufeld here and there, sometimes they refer to
20 network N, but for mechanisms that don't make sense.
21 So that is my -- and that's what I explain in
22 declaration, and I tried to reconcile these things.

23 Q. All right.

24 A. But to me, Neufeld, as the abstract says, it
25 is a security system includes different authentication

1 levels and/or different privileges based on certain
2 criteria.

3 So it is more about privileges and things and
4 higher level things and so on. The claims are all
5 about that. It has description of various kind of
6 things. A POSITA reading these things will get to --
7 they will get confused because there are things that
8 are inconsistent. The out-of-band were -- that's the
9 one that will make sense. The other, the in-band, even
10 if there are references to it, it -- like I -- I'm not
11 going to read from my declaration, but I explained a
12 little bit how to try to make sense of that.

13 Q. Okay. Let's go to paragraph 46 of your
14 declaration. That is on page 19 on the the bottom.

15 You say the management network M, as in Mary,
16 is in fact the only network coupled to Neufeld's remote
17 server management controller 116, correct?

18 A. Yes.

19 Q. Now you're aware, and you discussed in your
20 declaration, we'll go there in a amendment, that
21 paragraph 43 of Neufeld says something different.
22 Paragraph 43 of Neufeld, which again is Exhibit 1005
23 says that the remote management controller 116 connects
24 to a keyboard controller 38, the network N, as in
25 Nancy, and/or a management network M, as in Mary, and

1 then some other devices, correct?

2 A. Yes.

3 Q. Okay. So your statement in paragraph 46 that
4 the RMC 116 is only connected to network M is not
5 correct in light of paragraph 43 because paragraph 43
6 says that the RMC is connected to the network N,
7 correct?

8 A. No. What I -- I'm saying and, you know, if
9 you read -- I mean I'm sure you read the full
10 declaration, but what I'm saying there is Neufeld -- in
11 Figure 3 of Neufeld the ethernet interface is coupled
12 to the network N. The management network N is the only
13 network coupled to Neufeld's remote server management.

14 And here by "coupled" I'm meaning that it has
15 full control over it.

16 And then I go on. If you allow me -- let
17 me -- just to clarify and sure that what -- that is
18 clear, that what I'm saying is correct. In paragraph
19 47, At first glance, paragraph [0043]", I refer to 43
20 of Neufeld, "may appear to suggest a contradiction by
21 stating that the remote management controller 116
22 connects to ... the network N and/or the management
23 network M".

24 At first glance paragraph 43, I refer to 43
25 of Neufeld, may appear to suggest a contradiction by

1 stating that the remote management controller connects
2 to network N and/or management network M.

3 So basically I'm -- you know, I'm explaining,
4 you know, why I kind of -- that there is something
5 inconsistent in some sense with how POSITA would have
6 understood Neufeld. And here, and if you look at -- I
7 mean I could read, but since you said that I don't have
8 to read maybe I'll just jump to the last -- one of the
9 last sentences there is that "POSITA would recognize
10 that the reference to network N merely identifies that
11 the remote management controller can passively monitor
12 the data sent to or received from the managed device
13 over the network; it must be connected to that path to
14 snoop on the traffic, but that connection does not
15 equate to active participation in the data transmission
16 or use of the primary network interface for management
17 communication".

18 Q. So your opinion is nowhere in Neufeld is
19 there any disclosure of the RMC 116 using the network N
20 for transmission for management communication, correct?

21 A. There is text that talks about this -- the
22 snooping. And let me -- but, you know, I'm taking the
23 position of POSITA at the time and so on. There's no
24 text that makes sense that would let the remote
25 management controller transmit data over that network

1 interface inactively, you know, and control in it.

2 Q. Okay.

3 A. And the other elements that they present
4 before, you know, there always has to be -- if there's
5 -- so yeah.

6 Q. So there's no disclosure in Neufeld of RMC
7 116 transmitting data over network N in your opinion.
8 Do I have that right?

9 A. There is no place where it makes sense.
10 That's what I would say. Because I did the analysis.
11 There might be some text where -- so Neufeld has
12 various kind of thing that do not make sense to me. So
13 if there's a reference, I'm happy -- just show me and I
14 can look at it and explain why I am, you know, not
15 considering that in my final, you know, declaration, in
16 what I wrote in my declaration.

17 Q. Well, you're saying there's no disclosure
18 that makes sense to you. Is there some disclosure of
19 the RMC 116 transmitting data over the network N?

20 A. I don't think so.

21 Q. And you studied Neufeld carefully before
22 coming to that conclusion, correct?

23 A. Yes.

24 Q. All right. Let's go to paragraph 48 of
25 Neufeld.

1 A. Okay.

2 Q. There it says "if the data has been changed",
3 and we're talking about video graphics data, "the I/O
4 processor 156", which is a part of RMC 116, "will
5 compress the video graphics data and transmit the data
6 to the remote console 5 via one of the communications
7 devices (i.e., modem or NIC 110)". Do you see that?

8 A. Yeah. So let me just look at that and ...

9 So they mention it there, but they mention a
10 lot of things that are not consistent to me. I do not
11 know how you would do that given that you -- directly,
12 because the 110 is managed by the -- the whole device
13 to be managed. The remote management controller, it
14 explains sending something for that 110 interface would
15 have to go through the operating system of the host.
16 That could be -- which means that you would need to be
17 running some software on the host to -- that's
18 communicating with the RMC.

19 Q. All right. So first thing first.

20 Looking at Figure 10, the NIC 110 is only
21 connected to network N, as in Nancy, not network M, as
22 in Mary, correct?

23 A. So 110, right? NIC 110? Yes, it's connected
24 to network N.

25 Q. Okay. So when this passage states that this

1 video data will be transmitted from the RMC 116 to the
2 remote management PC5 via NIC 110, that's over network
3 N, as in Nancy, right?

4 A. Yes.

5 Q. Now, does that passage say whether or not the
6 operating system is running at the time?

7 A. It does not -- that paragraph itself does not
8 say that.

9 Q. Right. And does Neufeld anywhere say that
10 the only time in which this video data is going to be
11 transmitted is when the operating system is not
12 running?

13 A. Can you repeat the question?

14 Q. Sure.

15 Does Neufeld anywhere state that the only
16 time that the RMC 116 will transmit this video data to
17 the PC5 is when the OS is not running?

18 A. Your question is if Neufeld says that the
19 only time when this would happen is when the OS is not
20 running?

21 Q. Correct.

22 A. Let me look at it.

23 I'm not sure. So there is in fact in 34,
24 when it talks about the video -- so paragraph 34, the
25 last sentence says, "More specifically, the video

1 displayed on monitor is capable of being viewed on a
2 monitor independent of the OS".

3 Q. Sure it says that. That doesn't mean that
4 the only time that the video is displayed is when the
5 OS is not running, right?

6 A. Sorry. There are two double -- can you say
7 it?

8 Q. Yes, sir.

9 That last sentence in paragraph 34 doesn't
10 say that the only time that the video can be displayed
11 on monitor 8 is when the OS is not running, right?

12 A. It doesn't say that explicitly.

13 Q. It also doesn't say that the video will be
14 sent to the monitor 8 independently of the OS in all
15 instances, right? The paragraph says -- the sentence
16 says it must have the capability to do it independent
17 of the OS, but it doesn't say that it will not
18 sometimes send it even if it's dependent on the OS as
19 stated in paragraph 48 that you read earlier?

20 A. Yeah. But I think maybe you refer to what I
21 was saying earlier, which is that this functionality
22 would work even if there's no OS, right?

23 Q. Some functionality will work, which could be
24 sending it over management network N, but it doesn't
25 say never uses the OS to transmit this data. And in

1 fact, 48 says that it does transmit the data over
2 network N, right?

3 A. I think reading this, the special circuitry
4 and software operate without regard to the existence or
5 type of OS present. So -- so if it's going to provide
6 this functionality without the OS, it means it need to
7 have some mechanism to do that, and therefore some of
8 the inconsistencies that I mentioned.

9 So I think you're saying -- you're arguing
10 that it could provide some minimal functionality and so
11 on. I didn't read that in Neufeld so --

12 Q. No. You read paragraph 48, which says that
13 the RMC will send this video data over one of the
14 interfaces, which can be the network N via NIC 110,
15 right?

16 A. Yeah, but the -- the -- maybe going back --
17 so the NIC 110 is controlled by the OS. So I guess
18 just to understand what you're asking me, are you
19 asking if the OS was running and if the RMC went
20 through the operating system and sent data over that
21 and, you know, there was some kind of additional
22 functionality that was not really described explicitly
23 but, you know, is it prevent, you know -- I would say a
24 POSITA would not have understood these things this way.
25 There's not enough elements for it. But if you add

1 these additional features, like capabilities such that
2 you ran most of it without the OS but when you have the
3 OS you have additional capabilities so you can go
4 through the network, I mean, yeah. I mean, you know,
5 like I said earlier, Neufeld from the beginning is
6 fairly clear about the importance of the outer band.
7 And again, maybe reading my text it says it is the main
8 communication interface and emphasizes that. So the --
9 yeah.

10 Q. So you stopped I think one word short of
11 answering the question.

12 So it's entirely possible that if the OS is
13 running, that the RMC 116 could transmit video data
14 over the network N via NIC 110, right?

15 A. If someone adds this additional functionality
16 to communicate with the operating system and coming
17 back from the operating system with an application that
18 allows you to transmit over network N, if you add all
19 these kind of capabilities that Neufeld does not talk
20 about, you can imagine lots of things that provide much
21 more functionality. I did not see that in Neufeld, and
22 I saw Neufeld teaching more main -- again, there are
23 several things like I said. The inconsistencies, the
24 fact that the claims don't relate to this, the -- to
25 what we're discussing now. And these fairly explicit,

1 you know, statements saying that in-band, you know,
2 teaching is for the main communication interface which
3 is out-of-band.

4 Q. Well, Neufeld says that in-band communication
5 of remote management commands is a good thing, right?
6 Isn't that when he says in paragraph 15?

7 A. Let me just -- it says that it is -- so it
8 says to facilitate that it is highly retired to have a
9 management tool that is able to capture the maximum
10 amount of information from managed server from all
11 possibilities. But it says also that -- you know, that
12 the ethernet interface 180 provide the main
13 communication interface, and that the in-band would
14 only be there when the operating system is running.

15 So I think my feeling is that Neufeld would
16 have needed to be explicit for someone at the time
17 to -- you know, can do what you're suggesting, is to
18 provide this discussion to say if the operating system
19 is running, then with some additional capabilities so
20 that you communicate through the operating system and
21 come back on network N.

22 Q. And paragraph 48 explicitly says that the RMC
23 will translate data over NIC 110 at certain times,
24 right? That's one of the options, one of the
25 capabilities that Neufeld discloses, right?

1 A. It mentions that there. But again, I think
2 given what I mentioned, so I -- I think -- I already
3 reiterated most of the times how I --

4 (Reporter clarification)

5 A. -- reiterated that the Neufeld primary
6 mechanism is using the out-of-band communication, that
7 the in-band would only be used when the operating
8 system is running, and that the mechanism that are
9 taught basically imply an out-of-band communication.

10 Q. Does that complete your answer?

11 A. Yes.

12 Q. Okay. No further questions. Pass the
13 witness.

14 MR. THEISS: Thank you. Can we just have
15 five or ten minutes to confer? And can we come
16 back to the record at 11:30.

17 MR. HEINTZ: Certainly.

18 (Brief recess taken)

19 EXAMINATION BY COUNSEL FOR THE PATENT OWNER
20 BY MR. THEISS:

21 Q. Professor, you just had a very spirited
22 discussion with opposing counsel regarding the RMC's
23 ability to send video data out the network. Do you
24 remember that conversation?

25 A. Yes.

1 Q. Can you explain what would be involved to
2 make the Neufeld reference work the way opposing
3 counsel suggests that Neufeld works?

4 MR. HEINTZ: Objection, form.

5 A. So to be able to have Neufeld transmit data
6 over the network and interface the NIC 110, and given
7 that -- so first, the operating system has to be
8 running and you need to have some software that works
9 with the RMC to get -- to get whatever data needs to go
10 over the network N and then re-inject it through, you
11 know, the software layers, the driver and so on,
12 running on the device management to go over network N
13 interface. That is -- that us how I feel the -- what
14 would need to do this.

15 Q. Is any of that software that would be needed
16 to run described in Neufeld?

17 A. No.

18 MR. THEISS: No further questions.

19 REDIRECT EXAMINATION BY MR. HEINTZ:

20 Q. Dr. Noubir, I have a question for you.

21 It's your belief that RMC 116 transmits that
22 video data over the network M, correct?

23 A. So yes in general. But again just remember,
24 what I stated about Neufeld is that there are several
25 contradictions and so on so that -- yes, so that -- you

1 know, it would go over the managed -- the out-of-band
2 interface management.

3 Q. Would that require some software to be able
4 to send that data over a managed network M?

5 A. It would not require software running on top
6 of the operating system with the managed device. That
7 software would run within the RMC.

8 Q. Is there any description of that software
9 anywhere in Neufeld?

10 A. There is a description that the -- in Neufeld
11 in-band talking about the 116 that you have various --
12 kinds of software running within 116. I can -- if you
13 want, I can look for where I saw some discussion on
14 that. And I don't recall specifics, but there is
15 software running on the RMC.

16 Now, the key thing why I'm saying that's
17 important is because the 116 has direct access to the
18 ethernet interface 180. I mean, it's inside and it is,
19 you know, controlled by it. While the 110 is outside,
20 and it's managed by the driver so the device would be
21 managed.

22 Q. Yeah. I understand.

23 There's no specific discussion of the kind of
24 software that's needed to drive the ethernet interface
25 180 in Neufeld, is there?

1 A. So there are two things again. The software
2 to run -- I think the key distinction I'm trying to
3 make is that for NIC 110, that software is in the -- is
4 in the device to be managed while -- and because the
5 network interface can only be controlled by one entity.
6 While the management network, the interface 180 is
7 within -- it is with direct control. So -- and there's
8 an internal bus, the local bus 166. And if you want, I
9 should be able to find -- maybe if you give me a second
10 I can see what the --

11 Q. And if you want to look, go right ahead.
12 Take your time. But I'm not asking you, and I'm not
13 intending to suggest that the software runs in the same
14 place. I'm just asking about the description of the
15 software, okay?

16 A. The description I found is in paragraph 61
17 that says, "The embedded I/O controller 150 may also
18 include an Ethernet interface 180, which is operatively
19 coupled to the internal local bus. The Ethernet
20 interface provides the main external communication
21 interface between the remote Server management
22 controller and the outside world. In the exemplary
23 embodiment shown in FIG. 3, the integrated portion of
24 the Ethernet interface 180 includes a MAC (Media Access
25 Controller), inbound and outbound FIFOs and a DMA

1 engine to transfer packets automatically to and from
2 memory. The Ethernet interface 180 utilizes a
3 connection via interface 182 to an external" and so on.

4 So the -- yeah, I didn't find like something
5 specific saying software, but this is that you have a
6 MAC and FIFO, and it's directly connected to the I/O
7 controller.

8 Q. Let me ask you one last question.

9 Two last questions. If you were an operator
10 of a remote management console that was located far
11 away from where the server 2 was located, and your
12 connection for the management network M, as in Mary,
13 were somehow inoperative on your remote management PC5,
14 would you want the ability for your remote management
15 PC5 to be able to send management commands to the
16 managed server via the network N in that situation?

17 A. So the -- you know, your -- you're implying
18 something obvious that of course people would want
19 anything. Of course. But the -- but I think in
20 engineering these systems my understanding is that
21 there are trade-offs of what is feasible and what's --
22 how much additional, you know, components and software
23 and hardware needs to be added for something to make
24 sense.

25 So the -- and that's -- my understanding why,

1 first of all, the management interface is the one
2 that's supposed to be always there. That shouldn't --
3 it's a fallback. And the in-band, if you can, you
4 know, get something you would get it. But if it
5 requires you to -- to add additional hardware or, you
6 know, complex systems it would be --

7 But going back to Neufeld, I don't see that
8 discussion. I see them explicitly saying well, the
9 out-of-band, the in-band is only when the OS is running
10 and so on but -- so anyway, I'll stop here.

11 MR. HEINTZ: No further questions.

12 MR. THEISS: No further questions from our
13 end. Dr. Noubir, thank you so much.

14 He'll read and sign.

15 MR. HEINTZ: We asked for three-day turn
16 around.

17 MR. THEISS: No copy needed. We are good.

18 (The deposition concluded at {EndTime} P.M.)

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1 CERTIFICATE OF OATH

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STATE OF FLORIDA)

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COUNTY OF MIAMI-DADE)

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I, MICHELE ANZIVINO, Court Reporter and Notary

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Public, State of Florida, certify that

9

GUEVARA NOUBIR, Ph.D. appeared before me on the 24th

10

day of July, 2025, and was duly sworn.

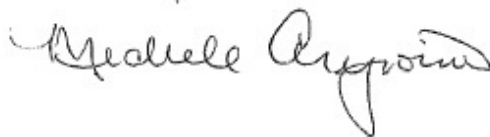
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Signed this 28th day of July, 2025.

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MICHELE ANZIVINO, Court Reporter

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Notary Public - State of Florida

My Commission Expires: 03/19/2027

My Commission No.: HH-375658

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1 CERTIFICATE OF REPORTER

2

3 STATE OF FLORIDA)

4 COUNTY OF BROWARD)

5 I, Michele Anzivino, Court Reporter, do
6 hereby certify that I was authorized to and did
7 stenographically report the deposition of
8 GUEVARA NOUBIR, Ph.D., that a review of the transcript
9 was requested; and that the foregoing transcript, pages
10 1 through 76, is a true and correct record of my
11 stenographic notes.

12

13 I FURTHER CERTIFY that I am not a relative,
14 employee, or attorney, or counsel of any of the
15 parties, nor am I a relative or employee of any of the
16 parties' attorney or counsel connected with the action,
17 nor am I financially interested in the action.

18

19 DATED this 28th day of July, 2025.

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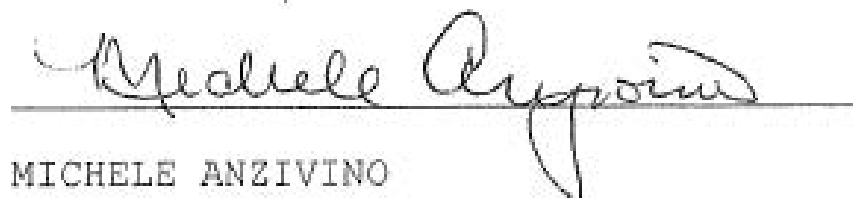
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27 MICHELE ANZIVINO
28 Notary Public - State of Florida
29 My Commission Expires: 03/19/2027
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Notice Date: Tuesday, 29. July 2025

156546

Attention: Guevara Noubir, Ph.D

Re:Lenovo (United States) Inc. v. Intellectual Ventures, LLC
Deposition of Guevara Noubir, Ph.D (7/24/2025)

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The above referenced transcript is available for review. Within 30 days, or the applicable timeframe of your legal jurisdiction, the witness may read the testimony to verify its accuracy. Any changes can be noted on the following errata page.

Once the transcript has been reviewed, the witness should sign and date the certificate of deponent page. The signed certificate, errata, and original transcript (if provided) must be returned to TP.One per the rules of civil procedure.

If the transcript and errata are not returned within the allotted time, the unsigned transcript may be used as if signed by the witness.

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Deponent Errata Page 156546

Notice Date: 07/29/2025

Deposition Date: 7/24/2025

Deponent: Guevara Noubir, Ph.D

Case Name: Lenovo (United States) Inc.
v. Intellectual Ventures, LLC

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I hereby certify that I have read and examined the foregoing transcript, and the same is a true and accurate record of the testimony given by me. Any additions or corrections that I feel are necessary, I will attach on a separate sheet of paper to the original transcript.

Signature of Deponent

I hereby certify that the individual representing himself/herself to be the above-named individual, appeared before me this ____ day of _____, 20__, and executed the above certificate in my presence.

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MY COMMISSION EXPIRES:

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