

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS INC.,

Petitioner,

v.

LIONRA TECHNOLOGIES, LTD.,

Patent Owner.

IPR2023-00703 - Patent No. 8,566,612

IPR2023-00673 - Patent No. 7,685,436

Wednesday, March 13, 2024

8:34 a.m. EDT

DEPOSITION OF ERIC COLE, PhD

(This proceeding was conducted via Zoom.

All participants appeared remotely.)

STENOGRAPHICALLY REPORTED BY:

Deanna J. Dean, RDR, CRR

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Cisco Systems, Inc. v. Lionera Technologies Ltd.

EX-1016

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Wednesday, March 13, 2024

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8:34 a.m. EDT

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Deposition of ERIC COLE, held via Zoom

8

videoconference, before Deanna J. Dean, a

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Registered Diplomate Reporter, Certified

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Realtime Reporter, and licensed court reporter

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of the state of New Hampshire.

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1 I N D E X

2

3 Examination Page

4 ERIC COLE, PhD

5 By Attorney McPherson 6, 95

6 By Attorney Auchter 91, 96

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9 E X H I B I T S

10

11 Number Description Page

12 Exhibit 2011 CV of Eric Cole 7

13 (previously marked)

14 Exhibit 2010 Declaration of Eric Cole 11

15 (previously marked)

16 Exhibit 1004 US Patent Application 23

17 2003/0074473 ("Pham")

18 (previously marked)

19 Exhibit 1012 US Patent No. 8,566,612 66

20 (previously marked)

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

2 THE REPORTER: Here begins the remote
3 deposition of Eric Cole, PhD, taken in the
4 matter of Cisco Systems Inc., Petitioner, v.
5 Lionra Technologies, Ltd., Patent Owner, pending
6 in the United States Patent and Trademark Office
7 before the Patent Trial and Appeal Board, Case
8 No. IPR2023-00703.

9 Today's date is March 13, 2024. The time
10 is now 8:34 a.m. Eastern Daylight Time.

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

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

19 ATTORNEY McPHERSON: So this is Patrick
20 McPherson from Duane Morris. I represent the
21 petitioner Cisco Systems, along with Patrick
22 Muldoon.

23 And just so the record is clear, this is a
24 deposition for two different proceedings. It's
25 also for IPR2023-00673 related patents, the

1 other patent being 7,685,436.

2 ATTORNEY AUCHTER: This is Robert Auchter
3 from Auchter PLLC, representing patent owner,
4 Lionra Technologies Ltd.

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

8 ATTORNEY McPHERSON: Yes.

9 ATTORNEY AUCHTER: Yes.

10 ERIC COLE, PhD,
11 a witness called for examination, having been first
12 duly sworn according to law, was deposed and
13 testified as follows:

14 EXAMINATION

15 BY ATTORNEY McPHERSON:

16 Q. Good morning, Dr. Cole.

17 **A. Good morning.**

18 Q. You have been deposed before. Have you
19 been deposed via Zoom before?

20 **A. Yes, I have.**

21 Q. Okay. Good.

22 So for Zoom, there is a delay between --
23 because we're not in the same room -- between me
24 speaking and you giving answers, and we both need
25 to make an effort to try not to overspeak each

1 other. So there are some abnormal delays sometimes
2 between questioning and answering. But that's for
3 the purpose of the court reporter. She is
4 recording all verbal answers.

5 You understand your counsel may object to
6 some questions. They will be noted for the record
7 by the court reporter. But unless he -- unless
8 your attorneys instructs you not to answer, you are
9 still to answer the question once the objection is
10 noted by the court reporter.

11 Do you understand that?

12 **A. Yes, I do.**

13 Q. Okay. Can you pull up Exhibit 2011, which
14 I believe is your resume, and let me know when you
15 have it ready.

16 **A. I have it.**

17 Q. On page 4 of your resume, there is a
18 section titled "Education."

19 Do you see that?

20 **A. I do.**

21 Q. And it says you received a Bachelor of
22 Science in computer science from the New York
23 Institute of Technology.

24 Do you see that?

25 **A. Yes, I do.**

1 Q. Was there any special concentration in
2 computer science that you studied for your
3 bachelor's?

4 A. The degree was in computer science. The
5 minor was in business. I did do my research in
6 cybersecurity. But you don't really have a
7 dissertation with a bachelor's degree, so it's
8 really just -- the focus is on the computer
9 science.

10 Q. Okay. And from your master of science in
11 computer science from New York Institute of
12 Technology, was there any specific concentration in
13 computer science associated with the master's?

14 A. No, there wasn't.

15 Q. Did you have a thesis?

16 A. Not for my master's.

17 Q. Okay. And for your doctorate in network
18 security from Pace University, was there any
19 specific concentration for that in network
20 security?

21 A. Well, the dissertation was in network
22 security. So the actual degree was a doctorate in
23 professional studies from Pace University, and then
24 my dissertation and all my research was in network
25 security. So that's why I listed it the way I did.

1 Q. If you look at page 1 of Exhibit 2011, it
2 has areas of expertise listed.

3 Do you see that?

4 **A. Sample areas of expertise.**

5 Q. Okay. So you consider yourself an expert
6 in other areas that are not listed here. Is that
7 correct?

8 **A. That is correct.**

9 Q. Would you consider yourself an expert in
10 packet processing?

11 **A. Yes, I would. I would put that under the**
12 **networking category that's listed there, and**
13 **protocols. The packet processing can be covered by**
14 **both of those.**

15 Q. Okay. And would you consider yourself to
16 be an expert in packet routing?

17 **A. Yes. And once again, I would put that**
18 **under the category of networking and protocols.**

19 Q. Would you consider yourself to be an
20 expert in encryption and decryption?

21 **A. Yes, and I would put that under**
22 **cybersecurity.**

23 Q. Would you consider yourself to be an
24 expert in compression and decompression algorithms?

25 **A. Generally on how they work, and**

1 **understand -- I mean, I work with them, so I**
2 **understand the components and how they work and how**
3 **they operate.**

4 Q. Would you consider yourself an expert,
5 though?

6 A. **I have expertise in that area, so we can**
7 **say yes.**

8 Q. Would you consider yourself an expert on
9 intrusion detection systems?

10 A. **Yes, I would, and I'd put that under**
11 **cybersecurity.**

12 Q. Are you named as an inventor on any
13 patents?

14 A. **Not on any issued patents, no.**

15 Q. Are you a named inventor on any patent
16 applications?

17 A. **Yes, I was.**

18 Q. Approximately how many patent
19 applications?

20 A. **It was a while ago, but I think it was**
21 **maybe six or seven.**

22 Q. And are you aware of whether any of those
23 patent applications issued as patents?

24 A. **I do not believe any of them did, because**
25 **they were abandoned.**

1 So I worked at TSIGI, The SYTEX Group Inc.,
2 and we filed for several patents because that was
3 part of their research strategy. The company was
4 acquired by Lockheed Martin, and Lockheed Martin
5 had a different strategy and decided not to pursue
6 those patents. So they basically got abandoned
7 because the company got acquired.

8 Q. Can I have you pull up Exhibit 2010,
9 please. And let me know when you have it pulled
10 up.

11 ATTORNEY AUCHTER: Counselor, I don't mean
12 to interrupt, but just for clearing my virtual
13 desktop here, are you done with the previous
14 exhibit? Can I put that away or --

15 ATTORNEY McPHERSON: For now, I think. We
16 can move on to another one.

17 ATTORNEY AUCHTER: Thank you.

18 A. I have that open.

19 Q. Okay. And Exhibit 2010 is your combined
20 declaration that you submitted regarding both the
21 '436 and the '612 patent. Is that correct?

22 A. That is correct.

23 And just -- I'm assuming because we'll be
24 spending a lot of time here, I do have a clean copy
25 of this on my other iPad. So is it okay if I use

1 that during reference so I don't have to keep going
2 back and forth?

3 Q. If it makes it easier for you, as long as
4 it's a clean copy, that's fine.

5 A. Yeah.

6 And just so you know, I have two iPads.
7 So one would be my Zoom and have a clean copy of my
8 report, and then the other one would be the
9 exhibits.

10 Q. That's fine.

11 In preparing Exhibit 2010, can you
12 identify for me what materials did you review?

13 A. I believe that's covered in the beginning
14 of the report. I looked at the -- I reviewed the
15 specifications and the claims of the '612 and the
16 '436 patents. I looked at the declaration
17 submitted by Cisco, and I looked at the prior art
18 or two of the pieces of prior art that they
19 referenced.

20 Q. Okay. Which pieces of prior art did you
21 review?

22 A. Pham and Wu.

23 Q. Did you review the petition that was
24 submitted by Cisco for the '436 patent?

25 A. Yes, I did.

1 Q. Did you review the petition for the '612
2 patent that was filed by Cisco?

3 A. Yes, I did.

4 Q. Did you review the institution decisions
5 for the '436 patent?

6 A. I believe that I did.

7 Q. Did you review the institution decision
8 for the '612 patent?

9 A. I believe that I did.

10 Q. Did you review the declaration submitted
11 by Mr. Crovella for the '436 patent?

12 A. I believe that I did.

13 Q. Did you review the declaration, the
14 Crovella declaration, for the '612 patent?

15 A. I believe that I did.

16 Q. Did you review the deposition transcript
17 of Mr. Crovella?

18 A. I don't remember. I'd have to go back and
19 check.

20 Q. Okay. Are there any other materials that
21 you reviewed as part of submitting your combined
22 declaration?

23 A. Sitting here today, not that I can recall.

24 Q. You have a list of materials that you did
25 review? I know you said that they're in your

1 declaration, but half of those items we identified
2 are not in your declaration.

3 Do you have a list someplace of what you
4 did review as part of your declaration?

5 **A. I do have a Dropbox link with the**
6 **documents that I had and I reviewed.**

7 Q. And if it was in your Dropbox, it was
8 something that you reviewed for the declaration?

9 ATTORNEY AUCHTER: Objection. Form.

10 **A. If it was in that location for this IPR,**
11 **then yes.**

12 Q. Okay. And do you have access to that
13 Dropbox right now?

14 **A. I could if I -- I mean, that would be**
15 **accessing other documents. So if you gave me**
16 **permission.**

17 Q. Yeah. If I could ask you to give me a
18 listing of the contents of the Dropbox that you
19 reviewed in order to prepare the declaration, I
20 would like to get that list.

21 **A. It would be the Wu and the Pham patents.**
22 **The '612 and the '436 patents. The petition.**

23 Q. Which petition?

24 **A. There are several here, so there's a --**
25 **looks like there's a stipulation. There's an -- a**

1 **decision granting institution.**

2 Q. And which petition is that for?

3 **A. For the '436.**

4 Q. Okay. And the petition that you
5 identified, which patent was that for?

6 **A. That's the '436. It's a corrected**
7 **petition for the '436.**

8 **And it would be similar for the '612.**

9 Q. Meaning the petition for the '612?

10 **A. Yeah. The stipulation and the decision**
11 **granting institution.**

12 Q. Okay. Anything else?

13 **A. And then the Crovella declaration.**

14 Q. Okay. Anything else?

15 **A. Not that I can see here, no.**

16 Q. It sounds like that you don't have a copy
17 of the deposition transcript for Crovella in the
18 Dropbox. Is that correct?

19 **A. That is correct.**

20 Q. Do you recall whether you reviewed that
21 transcript?

22 **A. I don't -- I don't think I did. That's**
23 **what I said. I don't recall having looked at his**
24 **deposition transcript.**

25 Q. Did you talk to anybody at Lionra before

1 preparing your declaration?

2 **A. Not that I can recall.**

3 Q. Okay. Are you familiar with Lionra?

4 **A. I mean, generally, having worked on this**
5 **case, I am.**

6 Q. Okay. And what business is Lionra in?

7 **A. I know they have some patents. I haven't**
8 **studied the company in detail. Sorry. I don't**
9 **know the details of the company and what businesses**
10 **they're in.**

11 Q. Okay. Do you know if they ever brought to
12 market any of the inventions described in the '436
13 or '612 patent?

14 **A. That, I'm not aware of, whether they have**
15 **or not.**

16 Q. Are you aware if there was any reduction
17 to practice of any of the inventions in the '436 or
18 '612 patent?

19 **A. For this declaration I was not asked to**
20 **opine on that, so I don't have an opinion on that.**

21 Q. I'm asking factually. Are you aware of
22 whether there was any reduction to practice of any
23 of the inventions claimed in the '436 or '612
24 patent?

25 ATTORNEY AUCHTER: Objection to form.

1 **A.** That was not something I was asked to
2 opine on, so I don't know one way or another. I
3 wasn't asked to research that for this IPR.

4 **Q.** In preparing for your deposition today,
5 what did you do?

6 **A.** I read through the report, I read through
7 some of the materials considered that we discussed,
8 and had some calls with the attorneys.

9 **Q.** Which attorneys did you have calls with?

10 **A.** Robert and John.

11 **Q.** What's John's last name?

12 **A.** You're going to get me in trouble because
13 I can't pronounce it correctly. Is it "Petrscopic"?

14 He's the John, I believe, that's in this
15 Zoom. I always deal with first names, so I've
16 actually never referred to them by their last
17 names.

18 **Q.** Okay. That's good. We have the spelling
19 for the court reporter there, so I think we're
20 good.

21 **A.** Now, if John doesn't talk to me because I
22 butchered his name, I'll blame you.

23 **Q.** If we look at Exhibit 2010, and I want to
24 direct your attention to paragraph 44.

25 Do you see that?

1 **A. I do.**

2 Q. Okay. And in this paragraph 44, you say,
3 "I restrict my review and analysis to Ground 1 and
4 independent claims of the Challenged Patents and
5 consequently restrict my review to the Pham and Wu
6 references."

7 Do you see that?

8 **A. Yes, I do.**

9 Q. And what do you mean you restrict your
10 review? What do you mean by that?

11 **A. That means my opinions in this declaration**
12 **are focused just on Pham and Wu. I did not provide**
13 **an opinion on the other references in this**
14 **declaration.**

15 Q. And did anyone instruct you to restrict
16 your review to that?

17 **A. I don't remember what -- what made us come**
18 **up with that conclusion. I mean, there are**
19 **discussions. I always have to be careful of the**
20 **discussions with the attorneys. But I'm not sure**
21 **what was the conclusion -- who came up with that**
22 **final conclusion for me to focus my declaration**
23 **just on Pham and Wu.**

24 Q. All right. Why is your review restricted
25 to those issues?

1 **A. That was once again the tasking that was**
2 **provided to me: to focus just on Ground 1 in the**
3 **independent claims and to restrict the claim of**
4 **Pham and Wu.**

5 Q. So the scope of the work you were
6 requested to do was limited to Ground 1 independent
7 claims of the challenged patent and Pham and Wu.
8 Is that accurate?

9 **A. That is correct.**

10 Q. Did you read grounds 2 through 4 of the
11 petition?

12 **A. I'm sure I did early on, when I read the**
13 **whole thing, but it wasn't what I focused my**
14 **declaration or what my opinion was on for this**
15 **declaration.**

16 Q. Did you review the state of the art
17 sections in each of the petitions filed for the
18 '612 and '436 patents?

19 **A. Initially, I probably did. I don't recall**
20 **specifically offhand. I probably did in the**
21 **beginning. But like I said, the scope of my**
22 **opinions in this case are limited to what's in the**
23 **declaration.**

24 Q. Did you review any of the prior art
25 references that were identified in the petition for

1 the '436 and '612 other than Pham or Wu?

2 A. I might have briefly early on, but like I
3 said, that was not what my assignment was and not
4 what my opinion was for this declaration. So I --
5 today I don't have an opinion other than what's
6 listed in this declaration for those IPRs.

7 Q. Okay. If you reviewed any prior art that
8 was identified in the petitions, would they have
9 been identified in your Dropbox that you referenced
10 earlier?

11 A. Once again, I believe the question before
12 was what I reviewed in writing my declaration. So
13 that was what was in the Dropbox. I might have
14 reviewed other things that are not in that Dropbox
15 because I didn't rely on it for forming this
16 declaration in this case.

17 Q. And do you recall relying on any other --
18 reviewing any other documents other than those
19 identified in your Dropbox?

20 A. I could have early on, because when I
21 first received the information, I don't remember
22 when -- when my scope was focused to Pham and Wu.
23 I might have reviewed those early on, but then as I
24 started working on the declaration and decided to
25 restrict my view to Ground 1 and the independent

1 **claims of the Challenged Patents and restrict my**
2 **review to Pham and Wu, I didn't focus on them in**
3 **putting together my declaration.**

4 Q. You just said when you decided to restrict
5 your review. I thought the scope that you were
6 given was to restrict your review to Ground 1 and
7 independent claims.

8 Did you make the decision or was the scope
9 of the work you were given restricted to Ground 1
10 and independent claims?

11 A. **I meant to say when it was decided. I**
12 **didn't mean to say when I decided. When it was**
13 **decided.**

14 Q. Do you know whether that limited scope of
15 review was given initially during your first review
16 or subsequently during the review process that was
17 determined to be the scope of your review?

18 A. **I don't remember.**

19 Q. So in this case, do you have any personal
20 knowledge of whether you did or did not review any
21 of the specific prior art references cited in
22 either the '436 or '612 petition?

23 ATTORNEY AUCHTER: Objection to form.

24 A. **Like I said, I might have early on, but**
25 **that was not what I focused on in writing the**

1 **declaration.**

2 Q. If I could turn your attention to
3 paragraph 80 of Exhibit 2010.

4 **A. Okay. I'm there.**

5 Q. In this paragraph, you say, "Pham
6 describes adding multiple data processing engines
7 to a switch, where the data processing engines are
8 exclusively configured to handle data packets
9 requiring compute-intensive processing, for
10 example, hardware encryption and decryption
11 algorithms called for by the IPsec protocol,
12 whereas the Challenged Patents describe and claim a
13 security processor with packet engines processing
14 'substantially all' of the packets that transit the
15 security processor, with cryptographic cores
16 tightly coupled to the packet engines."

17 Do you see that?

18 **A. Yes, I do.**

19 Q. And what do you mean that the data
20 processing engines are exclusively configured to
21 handle data packets requiring compute-intensive
22 processing? And, specifically, what does
23 "exclusively" mean when you use that word here?

24 **A. It means those data processing engines are**
25 **configured to only handle the data packets**

1 **requiring the compute-intensive processing.**

2 Q. And what do you mean by "compute-intensive
3 processing"?

4 A. Those are packets that require intensive
5 processing like hardware encryption and decryption
6 algorithms.

7 Q. And is compression a compute-intensive
8 processing?

9 ATTORNEY AUCHTER: Objection to form.

10 A. Is it okay if I look in Pham, or look at a
11 copy of Pham?

12 Q. Sure.

13 For the record, Pham should be Exhibit
14 1004.

15 A. So according to Pham, it talks about
16 intensive processing operations such as encryption,
17 compression, and protocol translation. So
18 compression could be one of those.

19 Q. And decompression would also be considered
20 to be compute-intensive processing. Right?

21 ATTORNEY AUCHTER: Objection to form.

22 A. That's not listed there, but that is
23 typically the inverse of compression.

24 Q. And the same for decryption. You would
25 also consider that to be compute-intensive

1 processing. Correct?

2 ATTORNEY AUCHTER: Objection to form.

3 **A. Once again, it's not listed there, but**
4 **that's the inverse of encryption.**

5 Q. And protocol translation, you would
6 consider that to be compute-intensive processing.
7 Correct?

8 ATTORNEY AUCHTER: Objection to form.

9 **A. That's listed specifically in Pham as one**
10 **of the intensive processing operations.**

11 Q. How about packet routing? Is that
12 compute-intensive processing?

13 **A. I do not see that listed there, and I**
14 **would say that typically is not.**

15 Q. Typically it's not compute-intensive
16 processing is what you're saying. Is that correct?

17 **A. Correct.**

18 Q. What about load balancing? Would you
19 consider load balancing compute-intensive
20 processing?

21 ATTORNEY AUCHTER: Objection to form.

22 **A. I mean, the point of Pham is to basically**
23 **be able to do load balancing of the predetermined**
24 **data packets, but I would not necessarily say load**
25 **balancing itself is compute-intensive.**

1 Q. What about the association of secure
2 authority or SA parameters? Would you consider
3 that to be a compute-intensive processing
4 operation?

5 ATTORNEY AUCHTER: Objection to form.

6 **A. So in Pham on page 4, it talks about the**
7 **offloaded tasks can include the full routing**
8 **function including the association of SA parameters**
9 **with network data packets and dynamic load**
10 **balancing. So that, once again depending on the**
11 **context, could be an offloaded task.**

12 Q. Okay. And my question is would you
13 consider the association of the secure authority or
14 SA parameters a compute-intensive processing
15 operation?

16 **A. Once again depending on the context, that**
17 **could be.**

18 Q. Okay. So in the context of Pham, would
19 the association of secure authority SA parameters
20 be considered compute-intensive processing
21 operations?

22 **A. In that one embodiment that I mentioned on**
23 **page 4, it's talking about the offloaded tasks. So**
24 **in that one case, it could.**

25 Q. Okay. And then let me revisit load

1 balancing. In the context of Pham, would load
2 balancing be considered a compute-intensive
3 processing operation?

4 **A. Once again, on the page before that**
5 **embodiment, it's talking about dynamic load**
6 **balancing distribution. So once again depending on**
7 **the embodiment of Pham, it could.**

8 Q. Not it could. It is, according to Pham.
9 And you're referring to paragraph 43 on
10 page 4. Is that correct?

11 **A. That is correct.**

12 Q. Okay. And let's revisit routing.

13 Routing, in the same paragraph, paragraph
14 43, is that considered a compute-intensive
15 processing operation, according to Pham at
16 paragraph 43?

17 **A. Once again depending on the context,**
18 **routing can mean a lot of different things. So in**
19 **this paragraph, it's talking about the full routing**
20 **function including the association of SA**
21 **parameters.**

22 So in that context, if it's the full
23 **routing function including the associated SA**
24 **parameters with network data packets and dynamic**
25 **load balancing distribution of data packets in**

1 **40B3, that is one of the offloaded tasks, but it's**
2 **very specific in terms of the context.**

3 Q. So the short answer is yes: in this
4 paragraph, routing would be considered in the
5 context of paragraph 43 as compute-intensive
6 operation. Right?

7 A. **In a very specific context. Not generally**
8 **or all the time. You've got to be very careful of**
9 **how you're using the words.**

10 So in a specific context as at
11 paragraph 43, it could be -- it is an offloaded
12 task, but it's in a very specific context. I
13 wouldn't say all routing would fall under that.

14 Q. What about filtering? Do you consider
15 filling a compute-intensive processing operation?

16 ATTORNEY AUCHTER: Objection to form.

17 A. **Once again it depends on the context.**

18 So if we look at paragraph 36 of Pham,
19 more complex operations such as the routing and
20 filtering of data packets present a substantial
21 challenge to accomplish at wire speeds. While
22 conventional routers routinely operate at wire
23 speeds, protocol processing operations that are
24 more compute-intensive typically involve data
25 conversions, and translations cannot conventionally

1 be achieved at significant wire speeds ranging from
2 about 1 gigabytes and higher but rather are
3 bandwidth limited typically to below 400 megabits
4 per second.

5 So it depends on how we're using these
6 words. We've got to be very careful, because
7 there's generic and then there's very specific
8 contexts in how they're used.

9 Q. So in the right context, then, you would
10 agree that some filtering operations could be
11 compute-intensive processing operations. Is that
12 correct?

13 ATTORNEY AUCHTER: Objection to form.

14 A. Once again I prefer -- I don't have Pham
15 fully memorized. So what Pham states about the
16 inventions and in the spec are what's listed.

17 Q. But your personal knowledge as an expert,
18 you would understand that some filtering operations
19 would be considered to be compute-intensive
20 processing operations. Right?

21 ATTORNEY AUCHTER: Objection to form.

22 Foundation.

23 A. Like I said, depends on the context.
24 You'd have to -- like we have here, you have to put
25 a lot of parameters and context around it. I

1 **wouldn't necessarily say filtering in general is.**

2 Q. I'm not asking filtering in general. My
3 specific question is, in some contexts, filtering
4 would, in fact, be considered a compute-intensive
5 processing operation. Correct?

6 ATTORNEY AUCHTER: Objection to form.

7 A. **I believe we covered that in Pham. I read**
8 **some areas of Pham. Pham does include some of**
9 **those in specific contexts as process-intensive.**

10 Q. All right. How about switching? Is
11 switching -- would you consider switching to be a
12 compute-intensive processing operation?

13 ATTORNEY AUCHTER: Objection to form.

14 A. **Once again it depends on the context.**
15 **Pham has some specific contexts -- for example,**
16 **paragraph 42. This also allows the ingress and**
17 **egress processes to extend the functionality of the**
18 **architecture to include data compression, network**
19 **data traffic switching and routing, and other**
20 **compute-intensive packet processing operations on a**
21 **single gateway device implemented in the**
22 **architecture.**

23 So in certain contexts, Pham would include
24 that as compute-intensive, but once again in very
25 specific contexts.

1 Q. Now, in paragraph 80, I understand you're
2 saying that you understand that data processing
3 engines are exclusively configured to handle
4 compute-intensive operations. But Pham is much
5 broader than that. Is that correct?

6 ATTORNEY AUCHTER: Objection to form.

7 **A. I would not agree with that. I believe**
8 **what I -- what I read is the line what's at**
9 **paragraph 80.**

10 Q. Well, Pham expressly says -- right? --
11 that the data processing engines can handle any
12 number of different network protocol processing
13 functions. Right? Doesn't it say that?

14 **A. Is there a specific area you're referring**
15 **to?**

16 Q. Well, let's look at paragraph 17 of Pham.
17 Does paragraph 17 of Pham limit the data
18 processors to only compute-intensive processing
19 operations?

20 ATTORNEY AUCHTER: Objection to form.

21 **A. It says still another advantage of the**
22 **present invention is that the data -- sorry -- that**
23 **the network data processes can be flexibly**
24 **configured to implement any number of different**
25 **network protocol processing functions, including**

1 particularly those that are compute-intensive. But
2 then it goes on and talks about all the
3 compute-intensive protocol processing.

4 So my understanding in reading it is that
5 Pham's focused on the protocol-intensive
6 processing.

7 Q. Okay. Well, being focused on something,
8 that's not the same as exclusively handling. You
9 would agree with me, wouldn't you?

10 A. In reading Pham, Pham is focused on the
11 network gateway processes doing the intensive
12 processes. So that's my opinion in reading Pham.

13 Q. I understand you're saying it's focused on
14 that, but the word you're using is "exclusively."
15 And there's nowhere in Pham where it says it is --
16 the data processes are exclusively for handling
17 compute-intensive. Correct?

18 ATTORNEY AUCHTER: Objection. Form.
19 Foundation.

20 Q. In fact, paragraph 17 contradicts that,
21 because it says they can handle any number of
22 different network protocols. Correct?

23 ATTORNEY AUCHTER: Objection. Form.
24 Foundation.

25 A. I don't see the word "exclusive," but in

1 reading Pham, it is -- in my opinion, it is focused
2 exclusively on the intensive. It says it could,
3 but then it says particularly those that are
4 compute-intensive. If you read all of Pham and
5 you're looking at the specification and the claims,
6 it is focused -- all of the network data process is
7 focused to be exclusively on the compute-intensive
8 components.

9 Q. Not exclusively. Right? Not exclusively.
10 The language that Pham is using is any number of
11 different protocols. Not exclusive. Right? It's
12 just the opposite of what you're saying. It's not
13 exclusive. It may be focused on it, but it's not
14 exclusive. You would agree with that. Right?

15 ATTORNEY AUCHTER: Objection.

16 A. No, I don't.

17 THE WITNESS: Sorry, Robert.

18 ATTORNEY AUCHTER: Objection to form.

19 Q. If I could turn your attention to
20 paragraph 82 of Exhibit 2010. At the bottom of
21 this paragraph, you use the language "The basic LAN
22 switching functions that are not
23 compute-intensive."

24 What do you mean by that?

25 A. Sorry. Where are you at?

1 Q. Yeah. This is paragraph 82 of Exhibit
2 2010. It's your declaration. It's on page 52.

3 A. I'm there.

4 Q. In the last sentence in that paragraph,
5 you use the language "the basic LAN switching
6 functions" and then in paren "that are not
7 compute-intensive."

8 What do you mean by that phrase?

9 A. That the standard switching that's done on
10 a router or a switch is not compute-intensive.
11 That's a standard functioning, and that sort of
12 supports what we read in Pham that sort of the
13 standard routing and switching is not very
14 intensive and can be handled by those devices.

15 Q. What do you mean by "LAN switching"? What
16 is LAN switching?

17 A. That's the moving of the frames of the
18 packets within a local area network.

19 Q. Within a local area network, or from a
20 local area network to another local area network?

21 ATTORNEY AUCHTER: Objection to form.

22 A. It could be either, depending on the
23 context.

24 Q. How about from a local area network to a
25 wide area network? Are you referring to that as

1 well when you say "LAN switching functions"?

2 ATTORNEY AUCHTER: Objection to form.

3 A. That that's typically more routing
4 functions if you're going to a WAN.

5 Q. Is there a distinction in your mind
6 between switching and routing?

7 A. Typically, there is a -- it depends on the
8 context of how they're used. Typically, switching
9 is usually layer 2 and routing is layer 3, but once
10 again, those terms are sometimes used differently.
11 So you just have to look at the context of how
12 they're used in the different patents.

13 Q. How are they used in Pham?

14 A. I believe they're basically used where
15 switching is used through layer 2 and routing is
16 layer 3.

17 Q. If I could direct your attention to
18 paragraph 52 of Exhibit 2010 -- that's your
19 declaration -- and specifically to page 24.

20 Do you see that?

21 A. I'm not sure -- I mean, I'm on page 24.
22 I'm not sure what you're referring to.

23 Q. Okay. I just want to make sure you're
24 there.

25 A. Yes.

1 Q. At the top of the page, there's Figure 3.

2 Do you see that?

3 A. Yes.

4 Q. And what do you understand Figure 3 to be?

5 A. This is just an example of the invention
6 sort of showing the plurality of processors.

7 Q. And it has several data packet processors
8 identified there. Correct?

9 A. That is correct.

10 Q. And those data processors can perform
11 various forms of protocol data processing. Right?

12 A. Once again they have specific details that
13 are laid out in Pham of what those processors are
14 meant to do. So I'd refer back to what's in Pham.

15 Q. All right. And what Pham describes are
16 some protocol data processing being performed by
17 the data processors. Right?

18 ATTORNEY AUCHTER: Objection. Form.
19 Foundation.

20 A. Yeah. In 13 of Pham, the data packet
21 processors each include a data processing engine
22 configured to perform a data processing function
23 over data contained within predetermined data
24 packets.

25 Q. And Pham also describes that those data

1 processors can do single-protocol conversion or
2 multiple-protocol conversion. Right?

3 ATTORNEY AUCHTER: Objection. Form.
4 Foundation.

5 **A. Is there a specific area in Pham you're**
6 **referring to?**

7 Q. Figure 3 in Pham, described on
8 paragraph 42.

9 **A. In Pham, Fig. 3 is the block diagram**
10 **illustrating a generalized multiprocessing level**
11 **embodiment of the present invention.**

12 Q. Right. And Pham describes that the data
13 processors can do single protocol conversion or
14 multiple protocol conversion. Right?

15 **A. Where specifically are you seeing that in**
16 **Pham?**

17 Q. In paragraph 42, which describes Figure 3.

18 **A. So in 42, the individual data packet**
19 **processors may be configured to perform a single**
20 **protocol conversion operation or multiple related**
21 **operations.**

22 Q. And then it provides the example --
23 examples for a single protocol conversion and
24 multiple protocol conversion. Right?

25 ATTORNEY AUCHTER: Objection. Form.

1 Foundation.

2 **A. I mean, it provides examples. I don't see**
3 **where it specifically breaks out for single and**
4 **multiple, but it does provide some examples**
5 **afterwards.**

6 Q. Well, I mean, one example it provides is
7 the same processors can do compression before
8 encryption and decompression after encryption.

9 That's an example of a multiple protocol
10 conversion. Right?

11 ATTORNEY AUCHTER: Objection. Form.

12 **A. I don't see where it actually says that in**
13 **paragraph 42 that it's doing multiple conversions**
14 **on it.**

15 Q. Do you see the example talks about
16 compression before encryption and decompression
17 after encryption?

18 **A. Yes.**

19 Q. So the same processor is doing compression
20 and encryption. Right? So that would be a
21 multiple protocol conversion. That's what Pham is
22 referring to. Right?

23 ATTORNEY AUCHTER: Objection. Form.

24 **A. That could be one example.**

25 Q. Right. And it gives an example for single

1 protocol conversion. Right?

2 You see the example there where you have
3 separate data processors for compression/
4 decompression and a separate process for
5 encryption/decryption. Do you see that?

6 **A. It does talk about single data processors**
7 **can be used to perform multiple compute-intensive**
8 **operations.**

9 Q. Right. So that would be the example of
10 single protocol conversion. Right?

11 ATTORNEY AUCHTER: Objection to form.

12 **A. It's saying a single data processing is**
13 **used to perform multiple compute-intensive**
14 **operations, so it's talking about multiple**
15 **operations there.**

16 Q. Right. And just right after that -- we
17 already talked about that.

18 Right after that it talks about using
19 separate processors-- right? -- for compression/
20 decompression and encryption/decryption. So,
21 there, it's talking about single protocol
22 conversion. Right?

23 **A. In that specific example.**

24 Q. Pham also discusses the transfer of data
25 packets between multiple data packet processors.

1 Right?

2 **A. Where specifically are you referring to?**

3 Q. In paragraph 42.

4 **A. I don't see that specifically.**

5 ATTORNEY AUCHTER: Counsel, it's been
6 about an hour and a half since the scheduled
7 start time. So let me know when you reach a
8 point where we can take a short break.

9 ATTORNEY MCPHERSON: I apologize. You
10 should have raised your hand earlier, Bob.

11 Yes. Let's take a 10-minute break, bio
12 break, get some more water.

13 Thank you.

14 ATTORNEY AUCHTER: Thank you.

15 THE REPORTER: Off the record at 9:37 a.m.

16 (Recess taken from 9:37 a.m.
17 to 9:52 a.m.)

18 THE REPORTER: Back on the record at
19 9:52 a.m.

20 BY ATTORNEY MCPHERSON:

21 Q. Dr. Cole, I think where I left off is
22 paragraph 42 of Pham. That also discusses the
23 transfer of data packets between multiple data
24 packet processors. Right?

25 **A. I think I was saying I didn't see that**

1 **specifically in there.**

2 Q. I think it's probably the third or fourth
3 last sentence from the bottom. The sentence says
4 "Single data processors 58 can be used to perform
5 multiple compute intensive operations or the fast
6 path processing of network data packets may be
7 extended to include the transfer of data packets
8 between multiple data packet processors before
9 finally being forwarded on to an egress processor."

10 Do you see that?

11 A. **I do see that in Pham, and once again**
12 **that's a very specific embodiment that's being**
13 **referred to. But it does say that in that**
14 **paragraph.**

15 Q. So is it fair to say, based upon the
16 context of paragraph 42, that Pham discloses that
17 these data processors that are shown in Figure 3,
18 that any one of them could perform data encryption?

19 ATTORNEY AUCHTER: Objection to form.

20 A. **On 42: "The individual data packet**
21 **processors may be configured to perform a single**
22 **protocol conversion operation or multiple related**
23 **operations. For example, packet data can be**
24 **compressed before encryption and decompressed**
25 **following encryption. Single data processors can**

1 be used to perform multiple compute-intensive
2 processing or the fast path processing of network
3 data packets may be extended to include the
4 transfer of data packets between multiple data
5 processors before finally being forwarded on to an
6 egress processor."

7 So it's saying that the processor could
8 perform encryption/decryption or compression.

9 Q. Right, or protocol translation. That
10 would be included as one of the compute-intensive
11 processes that could be performed by the data
12 processor. Right?

13 A. I don't see that specifically listed in
14 paragraph 42.

15 Q. Well, protocol -- you would agree protocol
16 translation is a compute-intensive process. Right?

17 A. As we talked about, depends on the
18 specific context of how it's used. We've got to be
19 really careful of the context of the term.

20 So I'm not seeing that specifically in 42,
21 so we have to be very careful of the context of how
22 these terms are used.

23 Q. Yeah. And just to be clear for the
24 record, the questions I'm asking you today are in
25 the context of Pham, about your description of

1 Pham, and my questions regarding your description
2 of Pham. I'm talking about the context of Pham
3 that you understand that the data processors are
4 capable of doing compute-intensive processing.
5 Right? You say exclusively, but they are capable
6 of doing compute-intensive processing. Right?

7 ATTORNEY AUCHTER: Objection to form.

8 **A. So if we go to paragraph 80 of my report,**
9 **"Pham describes adding multiple data processing**
10 **engines to a switch, where the data processing**
11 **engines are exclusively configured to handle data**
12 **packets requiring compute-intensive processing,"**
13 **and then lists some examples.**

14 **So the data processor engines handle**
15 **compute-intensive processing.**

16 Q. Right. And the compute-intensive
17 processing you identified in paragraph 80 does not
18 include all the compute-intensive processing that
19 Pham describes. Correct?

20 **A. Those are examples. I'd have to go and**
21 **cross-check whether they include everything or not.**
22 **But it's saying "for example."**

23 Q. Okay. Would you turn to -- let's go to
24 Claim 9 of Pham, which is found on page 10.

25 **A. I'm there.**

1 Q. Do you see Claim 9 there?

2 And Claim 9 is describing the
3 compute-intensive processing that a data processor
4 can do. Right?

5 ATTORNEY AUCHTER: Objection to form.
6 Foundation.

7 A. Claim 9 says "The method of Claim 8
8 wherein said compute-intensive data processing
9 function one or a combination of functions selected
10 from a group consisting of data encryption,
11 decryption, compression, decompression, and
12 protocol translation."

13 Q. Right. And you understand that to mean
14 that the data processors, the data processors found
15 in Figure 3, can perform each one of those
16 compute-intensive processes listed in Claim 9.
17 Right?

18 ATTORNEY AUCHTER: Objection to form.

19 A. I mean, Claim 9 is just talking about the
20 data processing function. I don't see the data
21 processor specifically listed in Claim 9.

22 Q. You're an inventor. Right? You're an
23 inventor for several patent applications? You
24 understand how to read claims?

25 A. Yes.

1 Q. You're an expert in patent cases?

2 A. That is correct.

3 Q. Right. And looking at Claim 9, the
4 compute-intensive processing that's being done,
5 right, that's recited in Claim 8 as the processors
6 doing that. Right?

7 ATTORNEY AUCHTER: Objection to form.

8 A. Claim 9 is a dependent claim relying on
9 Claim 8.

10 Q. And it's saying the type of processing
11 that the data processors are doing. Right? You
12 could read Claim 8 and figure that out pretty
13 quick. Right?

14 ATTORNEY AUCHTER: Objection to form.

15 A. Yeah. So Claim 8 is talking about a
16 method of operating a gateway for compute-intensive
17 data processing functions. It's receiving by a
18 first processor capable to said first network.

19 So I'm not sure what the specific question
20 was.

21 Q. Which processor in Figure 3 are doing the
22 compute-intensive processing?

23 ATTORNEY AUCHTER: Objection to form.

24 Q. I think we're at a disconnect here. Let
25 me reset with you, Dr. Cole.

1 You've read Pham. Correct?

2 **A. That is correct.**

3 Q. And you understand Pham?

4 **A. I understand. I don't have it memorized,**
5 **but I do understand.**

6 Q. And you understand Figure 3?

7 **A. Generally, yes.**

8 Q. And your opinion interprets Figure 3.
9 Correct?

10 **A. I do mention it was in my report.**

11 Q. Right. And you talk about the data
12 processors in Figure 3?

13 **A. Is there a specific area of my report**
14 **you're referring to?**

15 Q. Yeah. You just told me. Paragraph 80,
16 you're talking about the data processors.

17 Aren't those the same data processors that
18 we're talking in Figure 3?

19 ATTORNEY AUCHTER: Objection to form.
20 Foundation.

21 **A. That is correct.**

22 Q. Okay. So in paragraph 80 you say what
23 these data processors could do, and you interpret
24 Pham as saying that those data processors
25 exclusively perform compute-intensive processing.

1 Correct?

2 **A. That is what's in paragraph 80.**

3 Q. That's your opinion?

4 **A. That's correct.**

5 Q. All right. And in Claim 9, that's just
6 listing the type of compute-intensive processing
7 that can be performed by the data processors in
8 Figure 3. Right?

9 ATTORNEY AUCHTER: Objection to form.

10 **A. That is my -- that is my understanding.**

11 Q. Okay. In Figure 3, what do you understand
12 the routing processor to be doing there?

13 And that's element 62. It looks like a
14 series of routing processors. What do you
15 understand them to be doing?

16 **A. So that would be covered in paragraph**
17 **43 --**

18 Q. Okay.

19 **A. -- of Pham where it talks about a scalable**
20 **array of routing processors are provided to expand**
21 **the high-speed protocol processing capability of**
22 **the architecture. The routing processors can also**
23 **be utilized to perform other in-band protocol**
24 **management and data processing functions.**

25 Q. Okay. And it gives a specific example.

1 Right? At speeds above 20 gigabytes per second, it
2 talks about offloading some processing from the
3 ingress processor. Correct?

4 **A. Sorry. What is the specific question?**

5 Q. It gives a specific example at above 20
6 gigabytes per second, it offloads some processing
7 functions from the egress -- from the ingress to
8 the routing processor. Right?

9 ATTORNEY AUCHTER: Objection to form.

10 **A. If you're referring to sort of in the**
11 **second column, "In such cases, the array of routing**
12 **processors, preferably greater in number than the**
13 **ingress processors, can operate to offload packet**
14 **processing from the ingress processors."**

15 Q. Right. And you talked about that in your
16 declaration. Right?

17 **A. Is there a specific section of the**
18 **declaration you're referring to?**

19 Q. Did you talk -- do you remember talking
20 about that in your declaration?

21 **A. Generally, yes.**

22 Q. Okay. And you referred to this as, I
23 think, an alternative embodiment or something like
24 that. Right?

25 ATTORNEY AUCHTER: Objection to form.

1 **A. I'd have to check my declaration. I don't**
2 **have that memorized.**

3 Q. Okay. Well, let's stick with paragraph 43
4 first. You would agree -- paragraph 43 says you
5 can offload some tasks from the ingress processor
6 to the routing processor. Right?

7 **A. That's what Pham says.**

8 Q. Yes. And Pham describes that some of
9 those tasks could be routing. Correct?

10 **A. Well, you're talking -- in 43 we're**
11 **specifically talking about the routing processor.**

12 Q. Right.

13 **A. And some of the functions of the routing**
14 **processors.**

15 Q. Right. And it provides examples of the
16 types of offloaded tasks. Right?

17 **A. It provides a list of tasks.**

18 Q. Yes. And one of those is the full routing
19 function. Right?

20 **A. It does say that in Pham.**

21 Q. It also talks about dynamic load
22 balancing. Right?

23 **A. In this specific paragraph, with this**
24 **specific embodiment, it does say that.**

25 Q. Right. What do you understand dynamic

1 load balancing to mean in this paragraph?

2 **A. That's just being able to load balance**
3 **dynamically based on the traffic, not with any sort**
4 **of specific set way of doing it. It's done**
5 **dynamically based on the traffic.**

6 Q. And what is it balancing the load across?

7 ATTORNEY AUCHTER: Objection to form.

8 **A. Well, in this specific incident in Pham,**
9 **it says "Dynamic load balancing distribution of**
10 **data packets to the available data packet**
11 **processors."**

12 Q. Okay. And so you understand that to be
13 that the routing processor can load-balance the
14 data packets across the different data processors
15 numbered 58. Is that correct?

16 **A. That's one embodiment of Pham. That is**
17 **what's listed in Pham.**

18 Q. Another task that can be offloaded is the
19 association of SA parameters with network data
20 packets. Correct?

21 **A. That's what's listed in paragraph 43.**

22 Q. If you look at Figure 3, in the case where
23 the routing and load balancing is offloaded to the
24 routing processors, for a packet coming in to the
25 ingress processor, would that -- would that packet

1 have to go through the routing processor?

2 ATTORNEY AUCHTER: Objection to form.

3 **A. Sorry. What was the question again?**

4 Q. For a packet that comes in to ingress
5 processor -- and that's element 52 in Figure 3 --
6 would that packet have to go through the routing
7 processor in order to be delivered eventually from
8 the egress processor?

9 **A. I'm not sure. I would have to research**
10 **and look into that.**

11 Q. So you don't know?

12 **A. Not offhand, no.**

13 Q. Did you consider that embodiment in your
14 declaration?

15 **A. I would have to -- I mean, the declaration**
16 **is what it is. I'd have to check and see if that's**
17 **specifically in there.**

18 Q. Okay. Do you want to take the time to
19 look at your declaration and confirm for me whether
20 that specific embodiment is discussed?

21 I didn't find it. It's not a trick. I
22 didn't find it. If you think it's in there, please
23 point my attention to it.

24 **A. I do not believe I say that everything**
25 **coming into the ingress has to go through the**

1 **routing processor.**

2 Q. Okay. Does it?

3 A. **Looking at Figure 3, I do not believe it**
4 **does.**

5 Q. Okay. Why is that?

6 A. **Because the ingress processor, it can**
7 **communicate with those other components. The**
8 **routing processor is not sitting in line between**
9 **the ingress and the other processors.**

10 Q. In this situation shown in Figure 3 where
11 my routing and my dynamic load balancing and my SA
12 parameter association are all offloaded from the
13 ingress processor to the routing processor, it's
14 your opinion that a packet coming into ingress
15 processor that eventually gets sent out to the
16 egress processor does not need to go through the
17 routing processor. Is that your testimony?

18 A. **No, it's not. You changed the question.**

19 **So if it's -- if it's the instance we were**
20 **talking about where it does go through the**
21 **routing -- we just went through one embodiment in**
22 **Pham where it does use the routing processor.**

23 Q. Okay.

24 A. **So it could use the routing processor.**

25 **But I -- like I said, I don't believe I directly**

1 **opined on whether it always has to go through the**
2 **routing processor.**

3 Q. Okay. I guess I'm saying I didn't see in
4 your opinion where you talk about the specific
5 embodiment Figure 3 where there were three tasks
6 offloaded from the ingress processor to the routing
7 processor, those three tasks being the full routing
8 function and the dynamic load balancing and the SA
9 parameter association. In that embodiment shown in
10 Figure 3, I did not see any description of how that
11 processing works.

12 So I'm asking you, if you have a packet
13 coming into the ingress processor using that
14 embodiment in Figure 3, is it true that all those
15 packets have to go through the routing processor in
16 order to be directed to the proper egress processor
17 to leave the system shown in Figure 3?

18 ATTORNEY AUCHTER: Objection to form.

19 Q. That specific embodiment.

20 **A. And I think I said earlier I didn't**
21 **directly opine on that, so I would have to go back**
22 **and look into that. I don't know.**

23 Q. Okay. If you look down below on page 24
24 of your declaration, below Figure 3 is Figure 4.

25 Can you tell me what Figure 4 is showing?

1 **A. Figure 4 provides a block diagram of the**
2 **preferred embodiment of the network gateway packet**
3 **processor on the present invention.**

4 Q. Right. And you would agree with me that's
5 showing a specific implementation of the
6 architecture that's shown in Figure 3. Right?

7 ATTORNEY AUCHTER: Objection to form.

8 **A. I lost you on that question. Could you**
9 **say it again?**

10 Q. Yeah.

11 You would agree with me that Figure 4 is
12 showing a specific implementation of the
13 architecture that's shown in Figure 3?

14 **A. It's showing a preferred embodiment of the**
15 **gateway network processor.**

16 Q. Right. Which is a specific implementation
17 of the architecture shown in Figure 3. Correct?

18 ATTORNEY AUCHTER: Objection to form.

19 **A. That appears to be the case.**

20 Q. Right. And, in fact, it's a VPN
21 embodiment. Right?

22 **A. A VPN gateway.**

23 Q. Right. We'll call that the VPN
24 embodiment. Is that okay?

25 **A. Okay.**

1 Q. What's a VPN gateway?

2 A. VPN is a virtual private network, so it's
3 for handling encrypted channels between different
4 computers.

5 Q. Now, because it's a specific
6 implementation of the architecture of Figure 3, the
7 teachings from Figure 3 apply equally to Figure 4.
8 Correct?

9 ATTORNEY AUCHTER: Objection to form.

10 A. I mean, generally, it would depend on what
11 specifically you're referring to.

12 Q. Okay. Well, just like in Figure 3, the
13 routing can be offloaded from the ingress processor
14 and be done in encrypted processor 86. Correct?

15 ATTORNEY AUCHTER: Objection. Form.
16 Foundation.

17 A. Well, once again, Figure 4 doesn't show a
18 routing processor, so it would depend on what
19 specifically you're referring to.

20 Q. I'm referring to the crypto processor.

21 And do you understand that the routing
22 function can be offloaded from the ingress
23 processor to the crypto processor in Figure 4?

24 A. Can you repeat the question one more time?

25 Q. Yes.

1 Would you agree that the routing function,
2 just like was offloaded in the ingress processor to
3 the routing processor in Figure 3 and Figure 4, the
4 routing function can be offloaded from the ingress
5 processor to the crypto processor?

6 **A. I do not -- I would not necessarily agree**
7 **with that. The crypto processor is focused on the**
8 **specific intensive cryptographic processing.**

9 Q. And you understand that crypto processor
10 is one of the data processors identified in Figure
11 3. Right?

12 ATTORNEY AUCHTER: Objection. Form.

13 **A. But this is a specific -- the preferred**
14 **embodiment where it's focused on the intensive**
15 **cryptographic processing components.**

16 Q. Correct. But we also read how the data
17 processors can do more than one compute-intensive
18 processing function. Correct?

19 **A. Well, depending on the specific**
20 **embodiment. But I don't see that in this**
21 **embodiment.**

22 Q. Okay. Based upon the teaching of Figure
23 3, the routing function could be offloaded from the
24 ingress processor to the crypto processor.
25 Correct?

1 **A. I would not agree with that. I don't see**
2 **anything that supports that.**

3 Q. Okay. I thought we just said that we
4 discussed the teachings of Figure 3 and the data
5 processors there can do compression, encryption,
6 decryption, protocol translation. Right? We said
7 that. You told me that already. Correct?

8 ATTORNEY AUCHTER: Objection. Form.

9 **A. They could, but -- but Figure 4 is a**
10 **specific embodiment.**

11 Q. Yeah. I get that.

12 And you also told me that those data
13 processors can do single protocol conversion or
14 multiple conversions. Correct? And that was your
15 testimony as well, and you read that from Pham.

16 **A. We're -- I feel like we're mixing apples**
17 **and oranges. There's specific capabilities to**
18 **Figure 3 that we talked about, but then Figure 4 is**
19 **a specific embodiment focused on a VPN gateway. So**
20 **it's a specific embodiment focused on the high**
21 **intensive cryptographic functions.**

22 Q. Right. And that crypto processor, you
23 understand is one of the data processors from 58.
24 Right?

25 ATTORNEY AUCHTER: Objection to form.

1 **A. That is an example of a data processor**
2 **that has specific functions.**

3 Q. Right. And there's no place in Pham that
4 said crypto processor 86 can only perform
5 cryptographic functions. Correct?

6 **A. I would have to check, but I don't believe**
7 **it says that the cryptographic processors can**
8 **perform routing either.**

9 Q. Can you turn to paragraph 53 of your
10 declaration, Exhibit 2010. And this goes over to
11 the top of page 26.

12 And there you have Figure 5 in your
13 declaration. What is Figure 5?

14 **A. Figure 5 provides a block diagram of an**
15 **ingress/egress network processor module constructed**
16 **in accordance with the preferred embodiment of the**
17 **present invention.**

18 Q. Okay. And there it has -- it has a memory
19 there. Do you see that? Memory 100?

20 **A. I do.**

21 Q. And memory 100 has a routing and SA table.
22 Do you see that 102?

23 **A. I do.**

24 Q. What is the routing and SA table for?

25 ATTORNEY AUCHTER: Objection to form.

1 A. That would just be information that's used
2 for routing.

3 Q. Just for routing?

4 A. Well, it's the network processor that's
5 the memory for that, so it's basically information
6 that the processor would be using for routing
7 information.

8 Q. Okay. And you say "routing information."
9 Routing it to where?

10 A. Well, usually -- I mean, this is just a
11 figure. So, I mean, a network processor has
12 routing information determined in the router the
13 path back it should take.

14 Q. Right. And this is for the ingress
15 processor. The router should take through what?

16 A. To route the packets.

17 Q. Okay. And route it to what? What is it
18 routing the packets to?

19 ATTORNEY AUCHTER: Objection to form.

20 A. It depends on the implementation. I mean,
21 this is just a block diagram of an ingress/egress
22 network processor. So it's just showing the basics
23 that there's a processor and that it has memory and
24 a route table that it would use to make
25 information -- to make routing decisions.

1 Q. Would it use that information to determine
2 what data processor to send the packet to if it
3 needed data processing?

4 ATTORNEY AUCHTER: Objection to form.

5 A. I'm not sure. I don't believe I -- I'm
6 trying to answer the questions, but you're going
7 beyond what I opined on in my report. So I'm not
8 sure.

9 Q. Okay. Okay.
10 You've read Pham. Correct?

11 A. I did read Pham, but like I said, the
12 declaration is -- is the totality of my opinions.
13 So I'm trying to be helpful, but you're starting
14 now to take me way beyond the report of what I
15 opined on.

16 Q. Well, I mean, you're an expert in this
17 technology. Right? You're an expert in encryption
18 and decryption. Correct?

19 A. Right. But this is a very specific
20 implementation, and my declaration is the totality
21 of my opinions. So if there's something within the
22 declaration, I'd be happy to cover it. But like I
23 said, you're starting to take me way outside my
24 opinions in the declaration.

25 Q. Yeah. So I'm not limited to your opinions

1 in your declaration. I'm entitled to understand
2 the knowledge that you're bringing to write your
3 opinion. So I'm entitled to know what you
4 understand what the routing table and the ingress
5 processor is used for, without regard to whether
6 you described -- whether it's used in your
7 declaration.

8 And, in fact, there's not a good
9 description of this routing table in your
10 declaration. That's why I'm asking you that. So
11 for you to answer saying it's not in your
12 declaration, correct. That's why I'm asking you
13 this question.

14 So do you as an expert understand what
15 this routing table is used for and the ingress
16 processor of Pham as shown in Figure 5?

17 **A. I believe I answered to the extent of the**
18 **declaration. For anything additional, I would need**
19 **time to do that analysis.**

20 Q. Okay. Why don't you look at paragraph 50
21 in Pham. Read through that. And then as an
22 expert, can you explain to me what the routing
23 table is used for?

24 ATTORNEY AUCHTER: Objection to form.

25 **A. I could read you what Pham says. But like**

1 I said, that's not something I directly considered
2 in doing my opinion.

3 So, I mean, do you want me to read what
4 Pham says? That's fine, but I did not form a
5 direct opinion on that. I would need time if
6 you're asking me to form new opinions outside of my
7 declaration.

8 Q. Yeah, I'm not asking you for your opinion,
9 Dr. Cole. I'm asking you what is your
10 understanding -- reading Pham, what is your
11 understanding of the purpose of the route and SA
12 table 102 in Figure 5? Do you have an
13 understanding of that?

14 A. And I believe at the extent of forming my
15 opinion with the declaration, I answered that, and
16 you want me to go deeper and I would need more time
17 to do that because I haven't had time to form --
18 specifically, you're asking me for opinions outside
19 of my report, and I would need time to form those.

20 Q. Okay. So as you sit here today, you don't
21 know what the function of the route SA table 102
22 shown in Figure 5 is. Is that correct?

23 A. I believe I answered it. It's used for
24 general information by the network processor. But
25 you wanted more information, and that would require

1 **me to take time to form new opinions.**

2 Q. Okay. Once again, I'm not talking about
3 opinions. I'm talking about your understanding as
4 a person of skill in the art. Right? Provide a
5 factual analysis of what this is. Not an opinion.
6 A factual analysis. And you have not done that
7 yet. Correct?

8 ATTORNEY AUCHTER: Objection to form.

9 A. **To the extent of forming my opinions, I**
10 **have. You're asking me to go way beyond that,**
11 **which would require me to do further analysis.**

12 Q. Okay. What is an SA parameter? What is
13 that used for?

14 A. **That's a -- so, once again, I'd be happy**
15 **to read from Pham for you.**

16 **So an SA parameter that's used by the**
17 **ingress processor to dynamically create and attach**
18 **SA headers to each received IPsec data packet.**

19 Q. And can that functionality that's shown
20 here in Figure 5, can that be offloaded from the
21 ingress processor?

22 A. **In paragraph 50, preferably, the SA**
23 **parameter data is used by the ingress processor to**
24 **dynamically create and attach SA headers to each**
25 **received IPsec data packet.**

1 Q. Right. My question is, is that one of the
2 tasks that can be offloaded from the ingress
3 processor to one of the data processors?

4 A. So in paragraph 92 of my report, at the
5 end of the paragraph is "Furthermore, Pham makes
6 clear that when certain aspects of ingress
7 processing operation are 'offloaded' to the network
8 processor of the data packet processor/crypto
9 processor, the ingress processor maintains the
10 'basic switching and filtering' functions."

11 So it can offload certain things. I would
12 just have to spend time to form an opinion on
13 whether it offloads the SA parameters specifically.

14 Q. Okay. In paragraph 92 there, what do you
15 mean by "basic switching and filtering functions"?

16 A. I think we've also covered that earlier.
17 That's the basic routing and switching of the
18 frames and packets in a network.

19 Q. Can you look at Figure 6 from Pham, which
20 should be Exhibit 1004.

21 A. Okay.

22 Q. Would you agree with me that Figure 6
23 shows the same architecture from Figure 5?

24 ATTORNEY AUCHTER: Objection to form.

25 A. Well, Figure 5 is a block diagram of an

1 **ingress/egress network processor module, and Figure**
2 **6 is a block diagram of a network packet processor**
3 **module.**

4 Q. And would you agree that they use the same
5 architecture?

6 A. **I'm not sure what you mean by "use the**
7 **same architecture."**

8 Q. The network processors are the same make
9 and model number. Right?

10 A. **I don't know whether those are same make**
11 **or model.**

12 Q. Does Pham say they're the same make or
13 model?

14 A. **I don't recall whether he does or not.**

15 Q. Can you look at paragraph 49 of Pham, and
16 it provides the make and model number there. Do
17 you see that make and model number of the processor
18 being used for the ingress processor?

19 Do you see that?

20 A. **I do.**

21 Q. And then if you look in paragraph 51 where
22 it's talking about the crypto processor, you see
23 it's referencing the same make and model of the
24 processor being used for that?

25 A. **I don't see a 51 that's referring to the**

1 network processor again. So it's saying the
2 network processor, preferably an NP4GS3, which I
3 believe is what's listed at 49.

4 Q. Right. So the network processor in Figure
5 6 is the same as the network processor in Figure 5.
6 Right? Same make and model number?

7 A. I mean, it's saying preferably is. So, I
8 mean, I don't see that it has to be. It's just
9 saying it's preferred to be.

10 Q. Okay. Preferred. Okay.

11 And in Figure 6, what's the purpose of the
12 route table there, 118?

13 ATTORNEY AUCHTER: Objection to form.

14 A. I mean, if you're asking if there's a
15 specific part of my declaration, I'd be happy to
16 address it. Otherwise, it's just used for general
17 routing information. If you're asking for my
18 general knowledge, it's -- a route table is used
19 for general routing. If there's a specific area in
20 my declaration, I'd be happy to address it.

21 Q. Is the routing SA table 118 from Figure 6,
22 is that different than the routing SA table from
23 Figure 5?

24 A. I'm not sure. I'd have to research that
25 to form an opinion on that.

1 Q. Are they performing the same function --

2 ATTORNEY AUCHTER: Objection to form.

3 Q. -- the route SA table from Figure 6 and
4 the route SA table from Figure 5?

5 **A. Like I said, if there's a specific part of**
6 **my declaration, I don't see it specifically in**
7 **there. I'd be happy to address it. Otherwise, I**
8 **would need time to form an opinion on that.**

9 Q. Can you pull up a copy of the '612 patent.

10 ATTORNEY AUCHTER: Which exhibit number is
11 that?

12 ATTORNEY MCPHERSON: Should be Exhibit 1.
13 Exhibit 1 or 2, depending on which --

14 ATTORNEY AUCHTER: Whether the '612 or the
15 '436?

16 ATTORNEY MCPHERSON: Yeah.

17 ATTORNEY MULDOON: It's Exhibit 12.

18 **A. Okay. I have the '612 open.**

19 ATTORNEY MCPHERSON: Does everyone have
20 that?

21 Robert, do you have that?

22 ATTORNEY AUCHTER: Yes.

23 Q. Can I direct your attention to Claim 1.
24 Do you see that?

25 **A. I do.**

1 Q. Okay. And Claim 1 recites in the
2 preamble: "A security processor to process
3 incoming packets and outgoing packets."

4 Do you see that?

5 **A. I do.**

6 Q. Okay. Does that preamble limit the number
7 of packets?

8 ATTORNEY AUCHTER: Objection to form.

9 **A. I don't see a number there. It just says**
10 **"to process incoming packets and outgoing packets."**

11 Q. Is the preamble limited to any type of
12 packet?

13 ATTORNEY AUCHTER: Objection to form.

14 **A. It just says "incoming packets and**
15 **outgoing packets."**

16 Q. Are those packets limited to a certain
17 type of protocol?

18 **A. Once again, you have to take the whole**
19 **claim for itself. If you're asking just about the**
20 **preamble, I don't see anything in there about**
21 **specific types.**

22 Q. And further down in Claim 1, there's a
23 limitation that you discuss a lot in your
24 declaration. And that limitation is found in the
25 second clause, second element of Claim 1, and it's

1 the clause that says "substantially all of the
2 incoming and outgoing packets to the security
3 processor transit one of the plurality of packet
4 engines."

5 Do you see that?

6 **A. I do.**

7 Q. And that's referring back to the preamble,
8 the incoming packets and outgoing packets, isn't
9 that?

10 ATTORNEY AUCHTER: Objection to form.

11 **A. That is my general understanding.**

12 Q. And so if two encrypted packets are
13 received by a security processor that's recited in
14 the preamble of Claim 1, this clause "substantially
15 all," requires that those two encrypted packets --
16 right? -- transit one of the plurality of packet
17 engines. Is that correct?

18 ATTORNEY AUCHTER: Objection to form.

19 **A. You're starting to get into claim
20 construction and infringement read. So I would
21 have to -- that's not something I opined on in my
22 declaration. So if there's a section in my report,
23 I'd be happy to address it. But like I said,
24 you're way outside of my declaration in terms of
25 what I'm prepared to opine on for this depo.**

1 Q. This is not infringement or claim
2 construction. I'm asking you a question. Can you
3 answer that question?

4 **A. Is there a section in my declaration**
5 **you're referring to?**

6 Q. Once again, I am not limited to your
7 declaration. Okay? You can say that as much as
8 you want. But you're required to answer my
9 questions to the extent you can, yes or no.
10 There's no objection to that it's not in my
11 declaration. If your counsel wants to make that
12 objection, he can make that objection. But you
13 still need to answer the question.

14 **A. In my declaration, I put time to form my**
15 **opinions. If you're asking me opinions outside the**
16 **declaration, I would need time to form them. So**
17 **I'm not prepared to answer questions outside of my**
18 **declaration. I would need time to form those**
19 **opinions.**

20 Q. Okay. So in your declaration, where you
21 say "substantially all," what does that mean to you
22 in your declaration when you say "substantially
23 all"? Substantially all of what?

24 **A. Substantially all of the incoming and**
25 **outgoing packets to the security processor.**

1 Q. Okay. And if I have two packets, two
2 encrypted packets going to the security processor,
3 that substantially all would require both of those
4 packets. Isn't that correct?

5 ATTORNEY AUCHTER: Objection to form.

6 **A. Once again, it doesn't say "all." It says**
7 **"substantially all." So that would mean that most**
8 **of them would go through there. You're now asking**
9 **for very specific 2 versus 3, and I would need time**
10 **to opine on that.**

11 Q. All right. What if there were 10 packets
12 that were received by the security processor? Of
13 those 10 packets, how much would be substantially
14 all?

15 ATTORNEY AUCHTER: Objection to form.

16 Relevance.

17 **A. Like I said, I would need time -- that's**
18 **outside of my declaration, so I would need time to**
19 **analyze and form an opinion on that.**

20 Q. Now, when you say "substantially all,"
21 what time period are you looking over when you say
22 "substantially all"? Is it a packet flow? Is it a
23 day? Is it a week? Is it a year? Is there
24 certain types of packets? What's the context on
25 "substantially all" that you're using in your

1 report?

2 ATTORNEY AUCHTER: Objection to form.

3 **A. There's not a time period in the claim.**

4 Q. All right. So no time period. So it can
5 be any time period? Is that your understanding?

6 ATTORNEY AUCHTER: Objection to form.

7 **A. I don't see any time period listed on the**
8 **claim.**

9 Q. Okay. So how did you interpret that claim
10 when you say "substantially all"?

11 **A. If you're looking at the packets, that**
12 **substantially all of them, all the incoming and**
13 **outgoing packets. So if you're looking just at the**
14 **incoming and outgoing packets without a time**
15 **component but just looking at the packets, that**
16 **substantially all of them, incoming and outgoing**
17 **packets of the security processor, transit one of**
18 **the plurality of packet engines.**

19 Q. For all time, forever?

20 ATTORNEY AUCHTER: Objection to form.

21 **A. The system is working if packets are going**
22 **through. There's not a time component with it.**
23 **You're just looking at the packets going through**
24 **the system, and substantially all of them would**
25 **transit the plurality of packet engines.**

1 Q. Yes. But what's the context of "all"?
2 All of what? All the packets ever received by that
3 processor? All of the packets received in a single
4 flow? All the packets received over two hours?

5 A. The claim -- the claim just says all of
6 the incoming and outgoing packets. So --

7 Q. It doesn't matter.

8 ATTORNEY AUCHTER: Objection to form.

9 Q. The time period doesn't matter. Right?

10 A. There's no time period in the claim.

11 ATTORNEY AUCHTER: When you get to a good
12 transition point, counsel, it would be good to
13 take a break. It's been a little over an hour.

14 ATTORNEY McPHERSON: Let's take a
15 10-minute break.

16 ATTORNEY AUCHTER: Thank you.

17 THE REPORTER: Off the record at 11:00
18 a.m.

19 (Recess taken from 11:00 a.m.
20 to 11:15 a.m.)

21 THE REPORTER: Back on the record at
22 11:16 a.m.

23 BY ATTORNEY McPHERSON:

24 Q. Dr. Cole, I'd like to direct your
25 attention to paragraph 94 from your declaration,

1 Exhibit 2010, and specifically to the Figure 4
2 that's on the top of page 58.

3 **A. Okay.**

4 Q. Do you see that?

5 And what are you trying to show with this
6 Figure 4?

7 **A. To show LAN-to-LAN switching, LAN to VPN
8 WAN routing, and VPN LAN to WAN routing.**

9 Q. What do you mean by "LAN-to-LAN
10 switching"?

11 **A. That's switching going between local area
12 networks.**

13 Q. Okay. And what do you mean by "LAN to VPN
14 WAN"? What do you mean by that?

15 **A. That's going from a local area network to
16 a wide area network over a VPN.**

17 Q. Okay. Now, the embodiment shown in Figure
18 4, that shows a single LAN network. Right?

19 Number 74, that's clear text. Right?

20 **A. Right. 74 shows a local area network,
21 clear text.**

22 Q. That's a single network. Right?

23 **A. I said that's a local area network.**

24 Q. Yeah, but it's a single LAN. Correct?

25 **A. I mean, it represents a LAN. I don't see**

1 **the word "single" there, but, I mean, it represents**
2 **a local area network.**

3 Q. In paragraph 45, it describes that as "a
4 single physical LAN 74." Isn't that correct?

5 Is that correct?

6 A. **I'm looking at paragraph 45.**

7 Q. Oh. Sorry.

8 A. **It does say "a single physical LAN 74."**

9 Q. Okay. And so --

10 A. **But it does say -- sorry. It does say**
11 **"connection supporting multiple logical connections**
12 **over a local clear text network."**

13 Q. All right. And there it's showing that
14 single network, and the scenario you have drawn for
15 LAN-to-LAN switching is that a clear text packet
16 from the LAN would be sent to a VPN and then
17 returned through the same LAN.

18 In what situation does that happen?

19 ATTORNEY AUCHTER: Objection to form.
20 Foundation.

21 A. **I mean, you could have somebody on a local**
22 **LAN that's talking to somebody else on the LAN, and**
23 **it doesn't need to be encrypted.**

24 Q. Then why is it sent to the VPN gateway?

25 In fact, it wouldn't be sent to the VPN

1 gateway, would it, in the situation you just
2 described?

3 ATTORNEY AUCHTER: Objection to form.

4 A. It depends on the implementation. I mean,
5 sometimes your VPN gateway can route other packets
6 too. So, I mean, it could be routing the
7 unclear -- sorry -- the clear text packets.

8 Q. It could be routing the clear text
9 packets. Correct?

10 A. Right, to do the LAN-to-LAN switching.

11 Q. And in the situation where the routing
12 from the egress processor is offloaded to a data
13 processor, like we discussed before, that routing
14 would occur in the data processor. Isn't that
15 correct?

16 ATTORNEY AUCHTER: Objection to form.

17 A. You're giving me hypotheticals now, so I
18 would need to consider those. So you're starting
19 to change the parameters. So I'd have to look at
20 the specifics of those hypotheticals and then take
21 time to form an opinion.

22 Q. I'm just asking about your hypothetical.
23 You're saying you could send clear text from a LAN
24 to a VPN gateway for routing. You just told me
25 that. That's your hypothetical.

1 So I'm saying that routing could occur in
2 the data processor. The routing you just told me
3 could occur in the data processor, couldn't it?

4 ATTORNEY AUCHTER: Objection to form.

5 **A. Well, that's a hype -- sorry. You're**
6 **adding the hypothetical to my example that's in my**
7 **report. I'm just saying in this example that this**
8 **VPN gateway could route packets LAN-to-LAN.**

9 **If you start changing that and making it a**
10 **hypothetical, then I would need to consider that in**
11 **order to form my opinion on it.**

12 Q. In your example, where is the routing
13 being done? The example you have on page 58, where
14 is that routing being done in the VPN gateway?

15 **A. At that crossbar switch fabric. So --**
16 **and, once again, it's switching the packets, not**
17 **routing. So the packets are being switched between**
18 **the LAN. So they come in from the LAN, go through**
19 **the ingress, go to the crossbar switch fabric, go**
20 **to the egress processor, and then back to the LAN.**

21 Q. I want to use the hypothetical you're
22 using, and you said very clearly that the clear
23 text were being -- would be sent to the VPN gateway
24 for routing.

25 So where is the routing happening? I'm

1 not talking switching. I'm talking routing, the
2 example you used.

3 **A. In the example I used, it said LAN-to-LAN**
4 **switched packets.**

5 Q. Right. And when I asked you that, you
6 said -- in what situation would you have a single
7 LAN with clear text going to a VPN gateway? And
8 you said where you have one user on that LAN
9 talking to another user on the LAN, it would go
10 through the VPN gateway for routing.

11 And I want to know where is that routing
12 occurring?

13 **A. Sorry. I misspoke. I'm using routing and**
14 **switching -- I meant for the switching, because**
15 **this is LAN-to-LAN switching of packets. And then**
16 **it's LAN packets routed to VPN, and then VPN WAN**
17 **routed to LAN.**

18 So if I said that, I misspoke. This is --
19 in the red is showing LAN-to-LAN switch packets,
20 where you come in from the LAN, you go to the
21 ingress processor. You go to the crossbar switch
22 fabric. Those packets are switched, and then you
23 go back to the egress processor and back on to the
24 LAN.

25 Q. If you were not routing the LAN packet,

1 why are you sending it to a VPN gateway?

2 **A. Because you still need to switch -- I**
3 **mean, in the cases of VLANs or things like that,**
4 **you still might need to switch the packets between**
5 **the LAN.**

6 Q. Dr. Cole, for a single LAN, you do not
7 need to switch it. It's already on the LAN. What
8 are you switching? There's no switching required.
9 You're on a LAN.

10 ATTORNEY AUCHTER: Objection. Form.

11 **A. As I said -- as I said, if you're -- you**
12 **could have VLAN set up on there, so you could still**
13 **be switching. I don't agree with you that you**
14 **can't have switching between LANs.**

15 Q. It's not between LANs. It's a single LAN.
16 Why would you switch when you only have one LAN?
17 What are you switching to? It's already on the
18 LAN. Where are you switching it to?

19 **A. I'll refer back to Pham: a single**
20 **physical LAN connection supporting multiple logical**
21 **connections over a local clear text network. So**
22 **there could be multiple logical connections, and**
23 **that's what you're switching between.**

24 Q. If they're all on the same LAN, you do not
25 need to switch. Your scenario here is written for

1 LAN to a different LAN switching. Isn't that
2 correct? That's what you intended from this
3 diagram.

4 ATTORNEY AUCHTER: Objection. Form. Lack
5 of foundation.

6 **A. I don't agree with you, and I don't agree**
7 **that that can't happen. It's a single physical LAN**
8 **connecting -- supporting multiple logical**
9 **connections, and therefore you could have switching**
10 **across that. So I -- I do not agree with what**
11 **you're saying that that can't happen. I believe it**
12 **can.**

13 Q. So this scenario, you intended for it to
14 cover the situation where I have a packet on the
15 LAN that's staying on that same LAN, but you would
16 still send it to a VPN gateway?

17 **A. A single physical LAN supporting multiple**
18 **logical connections, yes.**

19 Q. And it goes to the VPN gateway for what
20 reason?

21 **A. To switch it between the multiple logical**
22 **connections.**

23 Q. Okay. And in this scenario that you have
24 here, for the LAN to VPN, where are those packets
25 routed? Where is the routing occurring?

1 ATTORNEY AUCHTER: Objection to form.

2 **A. That's happening at 78 and 86.**

3 Q. 78 and 86. So the routing is occurring
4 between those two.

5 Can the ingress processor do the routing?

6 **A. I would have to go back and consider that.**
7 **That's not something I directly opined on.**

8 Q. Well, I think we already talked about that
9 one of the tasks that the ingress processor can
10 offload is the full routing function.

11 Do you recall that?

12 **A. Well, we discussed a lot of things. So**
13 **generally, but not specifically.**

14 Q. Yeah, I know, but we've only been at this
15 for two hours. So you remember. You talked about
16 in 43. Remember? Offloading tasks, we talked
17 about three offloading tasks. Do you recall that?
18 It was about a hour ago.

19 **A. Like I said, not specifically. I could go**
20 **back and look at it specifically if you want.**

21 Q. Let's look at paragraph 43.

22 **A. Of Pham?**

23 Q. Of Pham, yes.

24 **A. So what's the specific question?**

25 Q. Yeah. So for your Figure 4, I asked you

1 which elements were doing the routing, and you said
2 crypto processor 86 and crossbar switch 78.

3 And I said does the ingress processor do
4 the routing in that example? And you said you
5 didn't know.

6 So I said let's look at paragraph 43 of
7 Pham and see if 43 of Pham talks about whether the
8 ingress processor can do routing.

9 ATTORNEY AUCHTER: Are you referring to
10 Figure 3? I'm sorry.

11 ATTORNEY McPHERSON: Figure 4 on page 58
12 of his declaration.

13 ATTORNEY AUCHTER: Okay.

14 ATTORNEY McPHERSON: The example he
15 annotated. And I'm trying to figure out which
16 embodiment he is discussing there in terms of
17 where is the routing occurring in Figure 4.

18 **A. All right. So if the question was looking**
19 **at paragraph 43 of Pham, giving the ingress**
20 **processors offload routing, that's covered at the**
21 **top of the page: "In such cases, the array of**
22 **routing processes, preferably greater in number**
23 **than the ingress processors, can operate to offload**
24 **packet processing tasks from the ingress**
25 **processors. The offloaded tasks can include the**

1 full routing function, including the association of
2 SA parameters with network data packets, and
3 dynamic load-balancing distribution of data packets
4 to the available data packet processors."

5 Q. If I understand what you're saying, those
6 offloaded tasks from ingress processor can be done
7 by the crypto processor in Figure 4. Correct?

8 ATTORNEY AUCHTER: Objection. Foundation.
9 Form.

10 A. I don't believe 43 says crypto processor.

11 Q. Well, I mean, you just said, before we
12 went to 43, that the crypto processor was doing the
13 routing function. And you said that because you
14 know it's offloaded from the ingress processor.
15 Right?

16 ATTORNEY AUCHTER: Objection. Form.

17 Q. Isn't that why you said the crypto
18 processor? That's where it was offloaded to.

19 ATTORNEY AUCHTER: Objection. Form.
20 Foundation.

21 A. Like I said, I feel like you're asking me
22 what's in Pham, and then you're changing what's in
23 Pham and then changing the question. So if it's a
24 different question, then that's okay. But I
25 thought you were saying that 43 said crypto

1 processor, and I didn't see in 43 where it said
2 crypto processor.

3 So if it's a different question, that's --
4 that's -- I misunderstood.

5 Q. Okay. I'll ask the same question that I
6 started this whole discussion with.

7 In your Figure 4, an example you have
8 there using that embodiment, where is the routing
9 occurring in Figure 4? You gave me the answer
10 once. Is it still the crypto processor, or do you
11 want to change your answer?

12 A. 78 and 86. It's still the same answer.

13 Q. Okay. So the crypto processor can do the
14 routing. Right? And we know that because it can
15 be the -- the full routing function can be
16 offloaded from the ingress processor to one of the
17 data processors, and the crypto processor is one of
18 the data processors. Right? That's why you
19 answered the way you did. Isn't that correct?

20 ATTORNEY AUCHTER: Objection. Form.

21 A. Generally, that's correct.

22 Q. Okay. Where was the load balancing being
23 done in your Figure 4? Your annotated Figure 4.

24 A. I don't believe I'm showing load balancing
25 in that.

1 Q. Okay. Well, where could it be done
2 according to what Pham describes?

3 A. Like I said in my declaration, I don't
4 cover load balancing, so I would have to go back
5 and consider that. If you're asking me to do
6 additional analysis, I would have to go back and do
7 that.

8 Q. Is load balancing one of the offloaded
9 tasks?

10 ATTORNEY AUCHTER: Objection. Form.

11 A. In Pham it's specific. In a specific
12 context it could be. But in terms of my annotated
13 Figure 4, that's not something I was opining on
14 there.

15 Q. Okay. Where is the SA parameter
16 processing being done in your Figure 4?

17 A. That's not something I considered in my
18 annotated Figure 4.

19 Q. So in annotated Figure 4, you only focused
20 on where the routing was being done. Is that
21 correct?

22 A. I annotated to show LAN-to-LAN switching,
23 LAN to VPN WAN routing, and VPN WAN to LAN routing.

24 Q. Okay. Did you consider the embodiment
25 where the full routing function is offloaded from

1 the ingress processor to the crypto processor?

2 **A. Not in this diagram.**

3 **Q. Anywhere else in your declaration?**

4 **A. As of 58, paragraph 58 of the declaration,**
5 **Pham also describes an alternative embodiment, a**
6 **scenario where the SA parameter data is also stored**
7 **in the memory associated with the network processor**
8 **of the data packet processor/crypto processor. In**
9 **this alternative embodiment, Pham describes that**
10 **only the SA parameter association task is offloaded**
11 **from the ingress processing 80 and performed by the**
12 **crypto processor. And it continues to sort of give**
13 **the reasons.**

14 **So that's where some of the routing is**
15 **done by the crypto processor. So that's one**
16 **example.**

17 **Q. Okay. And is that the full routing**
18 **function or is that the SA parameter association?**

19 **A. That's the SA parameter data.**

20 **Q. Okay. And did you consider the embodiment**
21 **where the full routing function is offloaded from**
22 **the ingress processor to the crypto processor?**

23 **ATTORNEY AUCHTER: Objection. Form. Lack**
24 **of foundation.**

25 **A. Well, it's also covered at paragraph 60,**

1 the fourth bullet, about five or six lines down:
2 "To the extent the Petitioner argues that all
3 packets after filtering can be passed to a data
4 packet processor/crypto processor for those
5 determinations, I do not find such an approach
6 feasible because the load balancing algorithm is
7 dependent upon the estimated completion time for
8 each crypto processor. The estimated completion
9 time is based on the size of the packet and
10 identity of the crypto processor. If the data
11 packet processor/crypto processor needs to send the
12 packet to the control processor to establish a
13 connection, it becomes impossible for the ingress
14 processor to readily estimate the completion time,
15 causing the load-balancing algorithm to
16 destabilize."

17 Q. Yeah. So in this paragraph, you're saying
18 the load-balancing algorithm cannot be offloaded to
19 a packet processor, aren't you?

20 ATTORNEY AUCHTER: Objection. Form.

21 A. That all of it can't. That's -- that's
22 correct.

23 Q. Okay. That's inconsistent with Pham,
24 which is saying it can be offloaded to a packet
25 processor. Right? That load balancing can be

1 offloaded to a data processor. Right?

2 You saw that in paragraph 43. You just
3 read that.

4 **A. I don't --**

5 ATTORNEY AUCHTER: Objection. Form. Lack
6 of foundation.

7 Please let me make the objections, Dr.
8 Cole. Thank you.

9 THE WITNESS: I apologize.

10 **A. I don't believe that's inconsistent with**
11 **what's in Pham.**

12 Q. All right. If you turn to page 57 in your
13 declaration, Exhibit 2010, you annotated Figure 1.

14 Do you see that?

15 **A. Paragraph 57?**

16 Q. Page 57. I think it's paragraph 94.

17 **A. Okay. I'm there.**

18 Q. Okay. And this is your annotation of
19 Figure 1. And if I look there, it looks like you
20 have red annotations of switch packets going
21 between LAN 1 to LAN 2. Is that correct? Or vice
22 versa.

23 **A. That's showing LAN 1 to LAN 2 switch**
24 **packets in red.**

25 Q. Yeah. When you say LAN-to-LAN switching

1 in your declaration, you're talking from one LAN to
2 another LAN. Correct?

3 **A. As we covered that, it could be logical or**
4 **it could be physical. So it could be two different**
5 **LANs or it could be one physical LAN with different**
6 **logical connections, like VLAN scenarios. So it**
7 **could be either one.**

8 Q. And in this scenario, if LAN 1 -- and this
9 is annotated Figure 1 -- if LAN 1 and LAN 2 use
10 different protocols, where would the protocol
11 translation take place?

12 **A. That was not something I considered, so I**
13 **would have to go back and do the analysis for that.**

14 Q. Would you just be able to switch packets
15 from LAN 1 to LAN 2, or would you have to do packet
16 processing?

17 ATTORNEY AUCHTER: Objection to form.

18 **A. You're adding new components. I would**
19 **have to go back and consider those.**

20 Q. I'm not adding new components. I mean, we
21 talked about this before. Right? We talked
22 about -- isn't this protocol translation? Isn't
23 that what we're talking about?

24 **A. So -- sorry. Are you asking if LAN 1 and**
25 **LAN -- you are putting specific characteristics on**

1 **LAN 1 and LAN 2 that I didn't consider, so I'm**
2 **saying I'd have to go back and consider that.**

3 Q. Okay. Let's go back to something we did
4 talk about.

5 If LAN 1 is using one type of protocol and
6 LAN 2 is using another type of protocol, you would
7 agree with me as an expert -- right? -- in these
8 protocols, that you would need some type of
9 protocol translation for those, to send packets
10 from one LAN to the other LAN. Correct?

11 A. Once again, you -- there's a lot of
12 component -- I mean, generally, if you're doing
13 different protocols, but it depends on which ones
14 and which type. Are they header? Are they tunnel?
15 There's a lot of parameters here that would need to
16 be considered.

17 Q. And Pham talks about protocol translation.
18 Correct?

19 A. So if we're back to -- yeah, Pham does
20 talk about that.

21 Q. And Pham calls it actually a
22 compute-intensive processing, doesn't it?

23 A. In specific contexts, he does.

24 Q. Right.

25 A. So in a very specific context, it could

1 **be.**

2 Q. Right. And so in that specific context,
3 where would the compute-intensive processing of
4 protocol translation occur in Pham?

5 **A. It depends on the embodiment.**

6 Q. Okay. Let's use -- pick an embodiment
7 that you've studied in your declaration, and
8 explain to me where that would occur.

9 **A. Protocol translation, I don't believe I**
10 **directly covered that in the declaration.**

11 Q. So you never considered an embodiment
12 where LAN 1 and LAN 2 used different protocols. Is
13 that correct?

14 **A. Not a specific example in the declaration.**

15 ATTORNEY McPHERSON: Okay. I think I've
16 exhausted my knowledge on this topic, or at the
17 very least, I've exhausted my notes. So I have
18 no more questions.

19 Robert, I will turn him over to you.

20 ATTORNEY AUCHTER: Let's take a short, as
21 in around 5-minute break, if we could. And then
22 we'll probably have a few follow-up questions.

23 And I'm pretty sure you haven't exhausted
24 your knowledge, but I can't speak to your notes.

25 ATTORNEY McPHERSON: Okay.

1 THE REPORTER: Off the record at 11:55
2 a.m.

3 (Recess taken from 11:55 a.m.
4 to 12:05 p.m.)

5 THE REPORTER: Back on the record at
6 12:05 p.m.

7 EXAMINATION

8 BY ATTORNEY AUCHTER:

9 Q. Dr. Cole, can I direct your attention to
10 Figure 3 of Exhibit 1004, Pham, please.

11 A. Okay. I'm there.

12 Q. Do you see that Figure 3 discloses data
13 processors and routing processors?

14 A. Yes, I do.

15 Q. Okay. And there was some discussion, I
16 believe, of the offloading of some tasks in
17 connection with the embodiment shown in Figure 3.
18 Is that correct?

19 A. That is correct.

20 Q. And now directing your attention to
21 paragraph 43 of Pham, is that describing Figure 3
22 of Pham?

23 A. So 42 is talking about Figure 3, and then
24 it looks like it continues in the 43 that is
25 referring to Figure 3.

1 Q. And does 43 -- does paragraph 43 of Pham
2 describe offloading to the routing processor?

3 A. It says "In such cases, the array of
4 routing processes, preferably greater in number
5 than the ingress processors, can operate to offload
6 packet processing tasks from the ingress
7 processors."

8 Q. Does paragraph 43 in any place discuss
9 offloading tasks to the data processors?

10 A. The next sentence: "The offloaded tasks
11 could include the full routing function including
12 the association of SA parameters with network data
13 packets and dynamic load-balancing distribution of
14 data packets to the available data packet
15 processors."

16 Q. And is that describing the distribution in
17 the packets from the routing processors to the data
18 packet processors, to, for example, the cross
19 switch shown in Figure 3?

20 A. I believe that it is.

21 Q. And do the data processors correspond to
22 the crypto processors?

23 ATTORNEY McPHERSON: Object to the form of
24 the question.

25 A. Sorry. Which figure? Because I don't see

1 **crypto processors in Figure 3.**

2 Q. That's true. There are no specifically
3 culled out crypto processors in Figure 3. That is
4 correct.

5 Are routing processors different from data
6 processors?

7 **A. They're listed separately in Figure 3, so**
8 **I would say yes, they are different.**

9 Q. Okay. And then directing your attention
10 to Figure 6 of Exhibit 1004, Pham, can you turn to
11 that, please.

12 **A. Okay. I'm there.**

13 Q. Then is Figure 6 described in paragraph 51
14 of Pham?

15 **A. Yes, paragraph 51 refers to Figure 6.**

16 Q. Okay. Does paragraph 51 of Pham disclose
17 that the SA parameter information is in the memory
18 116 of the device shown in Figure 6?

19 **A. Midway down, it says "Optionally, in**
20 **accordance with an alternative embodiment of the**
21 **present invention, the memory array 116 also**
22 **provides storage space for an SA parameter data**
23 **Table 118."**

24 Q. Does paragraph 51 in the context of Figure
25 6 describe storing routing information in the

1 memory?

2 **A. In paragraph 51, I do not see that**
3 **specifically listed.**

4 Q. And would a person of ordinary skill in
5 the art have understood that the information stored
6 in the memory in the embodiment in Figure 6 was
7 just the SA parameter association task information?

8 **A. Figure 6 says the route SA table. So it**
9 **would be the SA table that would be used for**
10 **routing.**

11 Q. Okay. Just the SA table. Is that
12 correct?

13 **A. Correct.**

14 Q. Directing your attention to something
15 completely different, Figure -- paragraph 3 of your
16 report.

17 **A. Okay.**

18 Q. Okay. Didn't you review the prosecution
19 histories for the '436 and the '612 patent?

20 **A. Yes, I did.**

21 ATTORNEY AUCHTER: Okay. I have no
22 further questions.

23 Thank you.

24 ATTORNEY McPHERSON: Okay. I have a few
25 redirect.

1 EXAMINATION

2 BY ATTORNEY McPHERSON:

3 Q. I want to go straight back to the SA table
4 in Figure 6 that you just described. And you said,
5 I believe, that the route SA table is just for the
6 SA parameter association and routing according to
7 that. Isn't that what you just said?

8 A. I believe I said it contains the SA table
9 information for routing.

10 Q. What else does that table contain?

11 ATTORNEY AUCHTER: Objection to form.

12 A. For Pham, it mainly includes the SA
13 association that we read in that paragraph.

14 Q. What else does it include?

15 A. I'm not sure what else it would include.

16 Q. Does Pham describe it including any other
17 information?

18 ATTORNEY AUCHTER: Objection to form.

19 A. Not that I can recall offhand.

20 Q. Okay. If you look at Figure 5 in Pham.
21 And I'll go back and ask the same question again.

22 What is the route SA table 102 in Figure
23 5?

24 A. It would be the same answer.

25 Q. Okay. What's the purpose of the SA table

1 in Figure 5 and Figure 6? What's that purpose of
2 the table?

3 ATTORNEY AUCHTER: Objection. Form.

4 **A. I believe we covered it. Let me go back**
5 **to that paragraph.**

6 **It provides storage space for a SA**
7 **parameter route table.**

8 Q. Is that all?

9 **A. That's my understanding.**

10 Q. And do you understand the route SA table
11 in Figure 6 and the route SA table in Figure 5 to
12 be the same?

13 ATTORNEY AUCHTER: Objection. Form.

14 **A. Generally, yes.**

15 ATTORNEY McPHERSON: I have no further
16 questions.

17 ATTORNEY AUCHTER: Just one, I guess,
18 re-recross, re-redirect, if I may.

19 EXAMINATION

20 BY ATTORNEY AUCHTER:

21 Q. Just directing your attention, Dr. Cole,
22 to paragraph 50 of Pham, does Pham distinguish
23 between the SA parameter data used by the ingress
24 processor and whatever SA parameter association
25 task would have been offloaded to the crypto

1 processor?

2 And that would be in paragraphs 50 and 51
3 of Pham.

4 **A. So I'm not -- are you asking -- I'm not**
5 **sure what the specific question is.**

6 Q. Sorry.

7 In the context of Figure 5 as discussed in
8 paragraph 50, is the data table identified as 102
9 used to store SA parameter association data, or is
10 it used to store SA parameter association data and
11 other information?

12 **A. It says "For implementations of the**
13 **ingress processor utilized in preferred embodiments**
14 **of the present invention, the data table also**
15 **stores network connection SA parameter data."**

16 **It doesn't list anything else.**

17 Q. Does it also say it provides a dynamic
18 data store for accumulated routing and filtering
19 information?

20 **A. Oh, before that. "Included within this**
21 **memory is the data table providing a dynamic store**
22 **for accumulation of routing and filtering**
23 **information," correct.**

24 Q. And is there any disclosure of that
25 accumulated routing and filtering information being

1 stored in 118, the SA table of Figure 6 as
2 described in paragraph 51?

3 **A. The dynamic store for accumulating routing**
4 **and filtering information, I do not see listed in**
5 **paragraph 51.**

6 ATTORNEY AUCHTER: I have no further
7 questions.

8 Thank you for your time, Dr. Cole. Thank
9 you for your time, ma'am.

10 ATTORNEY McPHERSON: Dr. Cole, thank you.
11 Deanna, thank you. Robert, thank you.

12 THE REPORTER: Can I just confirm
13 transcript orders, please?

14 ATTORNEY AUCHTER: We would like a rough
15 draft. I have an email from the person who is
16 our chief paralegal. Normal turnaround on the
17 final and a rough.

18 ATTORNEY MULDOON: Same thing here.

19 THE REPORTER: Okay. Thanks.

20 (Witness excused and deposition concluded
21 at 12:22 p.m. EDT.)
22
23
24
25

1 CERTIFICATE OF REPORTER

2

3 I, Deanna J. Dean, Registered Diplomate
4 Reporter, Certified Realtime Reporter, and New
5 Hampshire licensed court reporter, the officer
6 before whom the proceedings were taken, do hereby
7 certify that the foregoing transcript is a true and
8 accurate record of these proceedings; that said
9 proceedings were taken in Stenotype note by me on
10 the 13th day of March, 2024, commencing at 8:34
11 a.m. EDT and ending at 12:22 p.m. EDT.

12 I further certify that present on behalf of
13 Party Cisco Systems Inc. were Patrick D. McPherson,
14 Esq., of Duane Morris and on behalf of Party Lionra
15 Technologies, Ltd. Robert A. Auchter, Esq., of
16 Auchter PLLC.

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

22 Dated this 24th day of March, 2024, at Hillsborough
23 County in the State of New Hampshire.

24

25



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