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R. HORST - 1/26/2018
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORP., and
CAVIUM, INC.,
Petitioner,

V.

ALACRITECH, INC.,
Patent Owner

Case IPR2017-01391
U.S. Patent No. 7,237,036

VIDEOTAPED DEPOSITION OF
DR. ROBERT HORST
VOLUME 2
JANUARY 26, 2018
HOUSTON, TEXAS

REPORTED BY: Linda Russell, CSR
JOB NO: 136766

R. HORST - 1/26/2018

Friday, January 26, 2018
9:29 a.m.

DEPOSITION OF DR. ROBERT HORST, produced as a witness at the instance of the Patent Owner, and duly sworn, was taken in the above-styled and numbered cause on January 26, 2018, from 9:29 a.m. to 2:30 p.m., before Linda Russell, CSR, RPR, CLR in and for the State of Texas, reported by machine shorthand, at the offices of Quinn, Emanuel, 711 Louisiana Street, Suite 500, Houston, Texas.

R. HORST - 1/26/2018
A P P E A R A N C E S

REPRESENTING THE PETITIONER:
JUSTIN CONSTANT, ESQ.
Weil, Gotshal & Manges
700 Louisiana

Houston, Texas 77002

REPRESENTING THE PATENT OWNER:
SEAN LI, ESQ.
Quinn Emanuel Urquhart & Sullivan
50 California Street

San Francisco, California 94111

THE VIDEOGRAPHER:
ROBERT BIRDSALL

I N D E X

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BY MR. CONSTANT		128	
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ERRATA SHEET	133		

EXHIBITS MARKED

No.	Description	Page	
Exhibit 2300	Paper written by Robert Horst, IP Storage and the CPU Consumption Myth	119	
PREVIOUSLY MARKED EXHIBITS			
No.	Description	Page	
Exhibit 1003	Declaration of Robert Horst	6	
Exhibit 1005	U.S. Patent No. 5,768,618 ("Erickson")	8	
Exhibit 1006	Tanenbaum, Andrew S., Computer Networks, Prentice-Hall, Inc., New Jersey (1996), ("Tanenbaum96")	21	
Exhibit 1043	U.S. Patent No. 5,937,169 ("Connery")	106	
Exhibit 1044	U.S. Patent No. 5,434,872 ("Petersen")	108	
Exhibit 1049	PCT Application by Alacritech dated August of 1998	11	

R. HORST - 1/26/2018
P-R-O-C-E-E-D-I-N-G-S

THE VIDEOGRAPHER: This is the start of the deposition of Dr. Robert Horst in the case styled Intel Corporation and Cavium versus Alacritech, Incorporated, in the United States Patent and Trademark Office, Case Number IPR2017-01391.

The deposition today is being held at 711 Louisiana Street, Suite 500, Houston, Texas. Today's date is January 26th, 2018, and the time is approximately 9:29.

My name is Robert Birdsall, the legal video specialist. The court reporter today is Linda Russell. We are both with TSG Worldwide Reporting.

Would counsel please identify themselves.

MR. LI: This is Ziyong Li of Quinn Emanuel for Alacritech.

MR. CONSTANT: Justin Constant with Weil Gotshal & Manges representing Petitioner Intel Corporation.

THE VIDEOGRAPHER: Thank you. Court reporter, would you please

1 R. HORST - 1/26/2018
 2 swear in the witness.
 3 DR. ROBERT HORST,
 4 having been first duly sworn, testified as
 5 follows:
 6 EXAMINATION
 7 BY MR. LI:
 8 Q. Good morning, Dr. Horst.
 9 A. Good morning.
 10 Q. So first I'd like to remind you, do
 11 you remember the instructions my colleague Brian
 12 Mack gave you yesterday?
 13 A. Yes.
 14 Q. Do you understand they still apply
 15 today?
 16 A. Yes.
 17 MR. LI: I'm going to introduce the
 18 next exhibit which has been pre-marked as PTAB --
 19 IPR2017-01406 1003.
 20 (Exhibit 1003, having been previously
 21 marked was referenced.)
 22 Q. Dr. Horst, do you recognize this?
 23 A. Yes. This is the declaration I
 24 submitted for Intel on the '072 patent.
 25 Q. Do you mind turn to paragraph 108 on

1 R. HORST - 1/26/2018
 2 A. No, it was a textbook that was
 3 generally available.
 4 (Exhibit 1005, having been previously
 5 marked was referenced.)
 6 Q. Yesterday we talked about a prior art
 7 reference it's called Erickson; do you remember
 8 that?
 9 A. Yes.
 10 Q. It's been marked as Exhibit 1005.
 11 Can you pull that out?
 12 A. Yes, I have it.
 13 Q. Have you read this reference before?
 14 A. Yes.
 15 Q. Are you familiar with it?
 16 A. Yes.
 17 Q. Are there any portions of this
 18 reference cannot be understood by a college
 19 student majoring computer science, computer
 20 engineering, or electrical engineering --
 21 MR. CONSTANT: Objection. Form.
 22 Q. -- in -- back in 1997?
 23 A. I --
 24 MR. CONSTANT: Objection. Form.
 25 Sorry.

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 2 page 56.
 3 So paragraph 108 says, "Tanenbaum96
 4 is a 700-plus page textbook covering network
 5 hardware, software, protocols and standards." Do
 6 you see that?
 7 A. Yes.
 8 Q. So Tanenbaum96 is a textbook; is that
 9 right?
 10 A. Yes.
 11 Q. It's available to college students
 12 around 1997; do you agree?
 13 MR. CONSTANT: Objection. Form.
 14 A. Yes, it was available to college and
 15 others.
 16 Q. Any reason to believe it would not be
 17 available to college students around 1997?
 18 A. Not that I know of.
 19 Q. Any reason to believe it would only
 20 be available to advanced degree students?
 21 MR. CONSTANT: Objection. Form.
 22 A. No, I assume it would be available to
 23 all students.
 24 Q. Any reason to believe it would only
 25 be available to people with working experience?

1 R. HORST - 1/26/2018
 2 A. I can't speak to what a college
 3 student back there would have known.
 4 Q. Is there any reason you believe that
 5 some portions of this reference cannot be
 6 understood by them back in 1997?
 7 MR. CONSTANT: Objection. Form.
 8 A. I -- I don't have an opinion of what
 9 a general college student would have known in
 10 those days.
 11 Q. Okay. Are there any portions of this
 12 reference can only be understood by advanced
 13 degree students back in 1997?
 14 MR. CONSTANT: Objection. Form.
 15 A. Again, I don't have an opinion on
 16 that.
 17 Q. Are there any portions of this
 18 reference can only be understood by people with
 19 working experience back in 1997?
 20 MR. CONSTANT: Objection. Form.
 21 A. I don't have an opinion on that.
 22 Q. Are there any portions of this
 23 reference can only be understood by people with
 24 five year working experience back in 1997?
 25 MR. CONSTANT: Objection. Form.

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2 A. The five-year work experience was
3 part of my understanding of someone of ordinary
4 skill in the art. But the way your -- your
5 question didn't include the other requirements
6 that I had in the ordinary skill of the art, so I
7 don't have an opinion on that.

8 Q. No, that's not my question. My
9 question is are there any portions of this
10 reference cannot be understood -- or can only be
11 understood by people with five year working
12 experience?

13 MR. CONSTANT: Objection. Form.

14 A. I haven't --

15 Q. I'm not talking about skilled person
16 in the art.

17 A. I haven't tried to analyze that to
18 understand what they could or could not have
19 understood.

20 Q. Yesterday we talked about another
21 reference called Alteon; do you remember that?

22 A. I'm sorry, I couldn't hear you.

23 Q. Yesterday we talked about another
24 reference called Alteon.

25 A. Yes.

1 R. HORST - 1/26/2018

2 Q. Do you remember that?

3 A. Yes.

4 Q. It was pre-marked as Exhibit 1033, I
5 believe. Do you have it somewhere?

6 A. I don't have it here.

7 Q. Have you read it before?

8 A. Yes.

9 Q. Were you familiar with it?

10 A. Yes.

11 Q. Are there any portions of that
12 reference cannot be understood by a college
13 student back in 1997 majoring computer science,
14 computer engineering, or electrical engineering?

15 MR. CONSTANT: Objection. Form.

16 A. Again, I -- I don't know what a
17 college student would have known in that time.

18 Q. Are there any portions of that
19 reference cannot be -- can only be understood by
20 people with working experience -- five years
21 working experience?

22 MR. CONSTANT: Objection. Form.

23 A. Again, I can't comment on that.

24 (Exhibit 1049, having been previously
25 marked was referenced.)

1 R. HORST - 1/26/2018

2 Q. Now I'm going to introduce another
3 reference pre-marked as 1049. Do you recognize
4 what is it?

5 A. This is the PCT Application by
6 Alacritech dated August of 1998.

7 Q. Have you read it before?

8 A. Yes.

9 Q. Are you familiar with it?

10 A. Yes.

11 Q. Have you used it anywhere in your
12 Declaration?

13 A. This report is some of the -- is one
14 of the provisionals that the patents-in-suit are
15 based on, so I read -- I've read this report and
16 the other versions of the applications --

17 MR. CONSTANT: Objection --

18 A. -- and the issued patents.

19 MR. CONSTANT: Objection. Form.

20 Q. What do you mean by "report"? You
21 just said you read the report.

22 A. Oh, I read the patent application
23 that you --

24 Q. Okay.

25 A. -- you showed me.

1 R. HORST - 1/26/2018

2 Q. Okay.

3 A. Yeah.

4 Q. Good.

5 So in what way did you use this 1049
6 document in your Declaration?

7 MR. CONSTANT: Counsel, I think it
8 would make sense at this point to give him a copy
9 of his Declaration if you're going to ask that
10 question.

11 MR. LI: I think he has one of the
12 copies.

13 MR. CONSTANT: So you're just
14 referring to just the '072 Declaration?

15 MR. LI: No, I'm referring to all
16 Declarations.

17 MR. CONSTANT: That's my point, is if
18 you're going to ask him a question about whether
19 or not he used it, it would make sense to give
20 him the Declarations you're asking about.

21 MR. LI: We can -- we can introduce
22 that later.

23 Q. You can answer it --

24 A. I don't recall which -- which places
25 I referenced this. I did eight patents in this

1 R. HORST - 1/26/2018
2 case and so I don't know which ones I used
3 where -- which ones I referenced in which
4 Declarations.

5 Q. Are there any portions of this
6 reference cannot be understood by a college
7 student majoring computer science, computer
8 engineering, or electrical engineering back in
9 1997?

10 MR. CONSTANT: Objection. Form.

11 A. I have no opinion on that.

12 Q. Are there any portions of this
13 reference can only be understood by people with
14 five years working experience back in 1997?

15 MR. CONSTANT: Objection. Form.

16 A. I have no opinion on that.

17 Q. Let's look at the -- the Declaration
18 I just introduced into the evidence pre-marked as
19 1003.

20 A. Yes, I have it.

21 Q. Can you turn to page 18. Oh, I'm
22 sorry, paragraph 18, pages 6 through 7.

23 Starting from paragraph 18 on page 7,
24 it says, "Here, the '072 Patent is directed to an
25 apparatus and methods for network protocol

1 R. HORST - 1/26/2018
2 offload." Do you see that?

3 A. Yes.

4 Q. Okay. And keep reads, "In my
5 experience, systems such as those capable of work
6 protocol" -- "of protocol offload are not
7 designed by a single person but instead require a
8 design team with wide ranging skills and
9 experience including computer architecture,
10 network design, software development and hardware
11 development. Moreover, the design team typically
12 would have comprised individuals with advanced
13 degrees and some industry experience, or
14 significant industry experience." Do you see
15 that?

16 A. Yes.

17 Q. Why it requires so many skills and
18 experience --

19 MR. CONSTANT: Objection. Form.

20 Q. -- for network protocol offload?

21 MR. CONSTANT: Objection. Form.

22 A. Someone designing a system to do
23 protocol offload would need to develop hardware
24 and software and they would have to understand
25 the protocols in order to produce a working

1 R. HORST - 1/26/2018
2 system.

3 Q. Can you tell me which part
4 particularly requires these skills and cannot be
5 done by a bachelor degree student without
6 industry experience?

7 MR. CONSTANT: Objection. Form.

8 A. In my experience, someone with just a
9 bachelor's degree does not understand the
10 trade-offs and the -- doesn't -- would not have
11 the ability to actually design the hardware and
12 the software required. So typically someone that
13 comes out of school with a bachelor's degree is
14 not immediately put on designing something like
15 this.

16 Q. You just mentioned trade-off. What
17 do you mean by trade-off, what trade-off?

18 MR. CONSTANT: Objection. Form.

19 A. Trade-offs means at every step of a
20 design you have to evaluate alternatives and
21 decide which alternative is the best one to use.

22 Q. So in the -- in the design of network
23 protocol offload, what trade-off is involved?

24 MR. CONSTANT: Objection. Form.

25 A. There are trade-offs on what kind of

1 R. HORST - 1/26/2018
2 a processor to use and in what kind of -- which
3 portions of the protocol to offload, all the
4 things that I talked about in the background
5 section of my report.

6 Q. It seems you talk about a lot of
7 things in the background section. For example,
8 you just mentioned what processor to use. Why
9 that is a trade-off?

10 MR. CONSTANT: Objection. Form.

11 A. The processor has a cost and you can
12 put in a high performance high cost processor or
13 a lower performance low cost processor. And so
14 that's -- the trade-off there is trading off
15 performance for cost. And without some
16 experience, it's very difficult to make that
17 determination.

18 Q. You also mentioned about what should
19 be offloaded is also a trade-off to be
20 considered. Why that is a trade-off to be
21 considered?

22 MR. CONSTANT: Objection. Form.

23 A. When more of the protocol is
24 offloaded, there's more complexity in the
25 software that's run on the network interface

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