

BEFORE THE PATENT TRIAL AND APPEAL BOARD IN THE

UNITED STATES PATENT AND TRADEMARK OFFICE

TRIAL NOS.: IPR 2013-00082 through 2013-00087

PATENT NOS.: 5,978,791; 6,415,280; 7,945,544;

7,945,539; 7,949,662; 8,001,096

PATENT OWNERS: PERSONALWEB TECHNOLOGIES, LLC

& LEVEL 3 COMMUNICATIONS

PETITIONER: EMC CORPORATION & VMWARE, INC.

INVENTOR: DAVID A. FARBER and RONALD D. LACHMAN

DEPOSITION OF

DOUGLAS W. CLARK, PH.D.

July 10, 2013

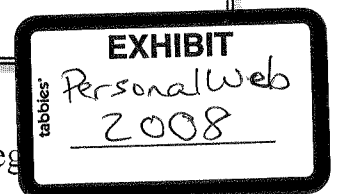
9:10 a.m.

Wilmer Cutler Pickering Hale And Dorr LLP

60 State Street

Boston, Massachusetts

Reporter: Rosemary F. Grogan, RPR, CSR No. 112993



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Also present:

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1 INDEX OF EXAMINATION

2 WITNESS: DOUGLAS W. CLARK, PH.D.

3 CROSS-EXAMINATION PAGE NO.

4 By Mr. Rhoa 5

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6 INDEX TO EXHIBITS

7 EMC NUMBER DESCRIPTION PAGE NO.

8 Exhibit 1001 U.S. Patent No. 8,001,096 B2 49

9 Exhibit 1004 FWKCS(TM) Contents_Signature 48

10 System, Version 1.22

11 1993 August 10 - Kantor

12 Exhibit 1005 U.S. Patent No. 5,649,196 132

13 Exhibit 1009 Declaration of Douglas W. 11

14 Clark, Ph.D.

15 Exhibit 1028 Coda: A Highly Available File 48

16 System for a Distributed

17 Workstation Environment

18 Satyanarayanan, et al.

19 Exhibit 1029 Exhibit H-54 - Invalidity of 50

20 U.S. Patent No. 8,001,096 over

21 Kantor, et al.

22 Exhibit 2004 ZIP File Format(PKWARE) 50

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3	Exhibit 1001	U.S. Patent No. 5,978,791	133
4	Exhibit 1003	Email 8/7/91 from Langer	179
5	Exhibit 1009	Declaration of Douglas W.	133
6		Clark, Ph.D.	
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1 DOUGLAS W. CLARK, PH.D., having been
2 satisfactorily identified by the production of a
3 driver's license, and duly sworn by the Notary Public,
4 was examined and testified as follows:

5

6 CROSS-EXAMINATION

7 BY MR. RHOA:

8 Q. Please state your name and address for the
9 record.

10 A. I'm Douglas Clark. I live at 2215 St. James
11 Place in Philadelphia.

12 Q. Date of birth?

13 A. October 26, 1950.

14 Q. Are you currently employed?

15 A. Yes.

16 Q. By whom?

17 A. Princeton University.

18 Q. How long have you been employed at Princeton?

19 A. Just over 20 years.

20 Q. What's your current job?

21 A. Professor of computer science.

22 Q. How long have you held that position?

1 A. The same, 20 -- a little more than 20 years.

2 Q. How many classes do you teach?

3 A. It's the Ivy league. It's fairly relaxed, one
4 at a time.

5 Q. How many days a week are you teaching?

6 A. Two or three.

7 Q. What types of classes are you teaching?

8 A. I have -- I'm currently teaching a large
9 freshman lecture. I have taught sections of that same
10 class. I have taught, recently, computer architecture.
11 And slightly less recently, a course on the great papers
12 of computer science.

13 And if we go back 20 years, there are a
14 number of others.

15 Q. What types of technologies do the classes that
16 you teach involve?

17 A. The freshman course is a general introduction
18 to the field. It is mainly programming, but we touch on
19 hardware. We touch on software engineering; theory of
20 computer science; tiny bit of artificial intelligence.
21 We try to give them a broad exposure not just
22 programming.

1 Some schools have their first course.

2 That's not what we do.

3 Q. Do any of your classes relate to database
4 processing?

5 A. I would say we touch on that in the freshman
6 course, but not much.

7 Q. Have you taught any classes related to
8 database processing?

9 A. In the great papers class, we did for a time
10 have the classic CODD paper, C-O-D-D. And that's the
11 closest I can think of.

12 Q. Have you ever taught any classes that relate
13 to file processing?

14 A. Not completely sure what you mean by "file
15 processing," but I think no is a fair answer.

16 Q. And what would be your understanding of "file
17 processing" when you answered that question?

18 A. Actually, I -- I didn't have a definition in
19 mind.

20 Q. Can you describe your educational background
21 starting with undergraduate college?

22 A. I went to Yale, and then to Carnegie-Mellon

1 for Ph.D.

2 Q. What did you get your undergrad degree in?

3 A. Computer science.

4 Q. Did you get a degree at Carnegie-Mellon?

5 A. Yes.

6 Q. What was that degree?

7 A. I beg your pardon? I got my Ph.D. degree at
8 Carnegie-Mellon in computer science.

9 Q. Did you do a thesis?

10 A. Yes.

11 Q. What was that thesis on?

12 A. It was on LISP. It was called List Structures
13 Measurements, Algorithms, and Encodings.

14 Q. How do you spell that?

15 A. The language is LISP, L-I-S-P, which was a
16 list processing. And...

17 Q. Is that it a programming language?

18 A. That's a programming language.

19 Q. What year did you get your undergrad degree
20 and your Ph.D.?

21 A. Undergrad in '72; Ph.D. in '76.

22 Q. Do you have any other degrees?

1 A. No.

2 Q. You don't have a law degree, right?

3 A. No.

4 Q. Have you ever taken any law classes?

5 A. No.

6 Q. Do you have any patents?

7 A. No.

8 Q. Have you ever applied for a patent?

9 A. Yes.

10 Q. How many?

11 A. Two.

12 Q. Are they still pending? What happened to
13 them?

14 A. It was when I was working for Digital
15 Equipment Corporation in the 1980s, and there was a
16 flurry of patent filing just before the product was
17 announced. I think that's what happened.

18 And I was a named inventor on two of them
19 and I don't know what happened with them.

20 Q. Can you identify all the places you've been
21 employed since you've got your degrees?

22 A. Yes.

1 MS. VREELAND: Objection.

2 A. Employed full-time? So you mean, for example,
3 you want to hear about summer jobs?

4 Q. If they're related to computer science, yes.
5 If not, no.

6 MS. VREELAND: Objection to form.

7 A. Okay. So in college, the summer jobs included
8 working at a laboratory in St. Louis at Washington
9 University, where I programmed minicomputers. And I
10 think that's two summers. Another summer I went to
11 England and worked at a hospital for programming
12 minicomputers.

13 My other summer employment, my relevant
14 other summer employment, would be at a place I went to
15 work after getting my Ph.D. which was at Xerox Park. I
16 was there for a few summers in graduate school, and then
17 they hired me. So that was my first employer, Xerox
18 Palo Alto Research Center. That was for four years.

19 Then I left to go to Digital Equipment
20 Corporation.

21 Q. Tell you what, let me cut you off there. I
22 would like to introduce Exhibit EMC 1009.

1 (Exhibit No. 1009 marked for identification)

2 BY MR. RHOA:

3 Q. Do you have Exhibit EMC 1009 in front of you?

4 A. Yes.

5 Q. What is this?

6 A. This is...

7 (Witness reviewing)

8 A. My declaration in the '096 IPR, unless it's a
9 couple of them stapled together.

10 Q. Is this your declaration in the IPR relating
11 to the '096 patent?

12 A. Yes.

13 Q. Is that your signature on page 60?

14 A. Yes.

15 Q. Behind your signature, there's an appendix.
16 Do you see that?

17 A. Yes.

18 Q. Is that, basically, your resume?

19 A. Yes.

20 Q. Is that resume true and accurate, as you sit
21 here today?

22 A. Yes.

1 Q. So there's an employment section that begins
2 on the first page of your resume, right?

3 A. Yes.

4 Q. Since you got your undergrad degree, have you
5 been employed by anyone that is not identified here on
6 the front page of your resume?

7 A. Since undergrad? No.

8 Q. Have you been employed continuously at
9 Princeton since 1993?

10 A. Yes. I went to go back and correct a tiny
11 misimpression I may have given you. Some of these
12 people didn't pay me. So when I was on sabbatical, for
13 example, at Penn in the spring of 2003, I was still
14 being paid by Princeton. I had an office and worked at
15 Penn.

16 And similarly, when I had a sabbatical at
17 Harvard from Digital, Digital was still paying me. I
18 was just teaching a course at Harvard.

19 Q. When you were at Digital, between 1980 and
20 1982, what type of work did you do?

21 A. '80 and '82 was architecture, computer
22 architecture, about the VAX systems.

1 Q. How do you spell that?

2 A. V-A-X.

3 Q. Same stuff for your entire tenure at Digital
4 Equipment?

5 A. No. Digital moved from the VAX architecture
6 to the Alpha architecture. That happened in the early
7 1990's, and I moved with that. I mean, I moved to
8 working on Alphas instead of VAXes.

9 Q. In the early '80s or the early '90s?

10 A. In the early '90s.

11 Q. When did you stop working for Digital?

12 A. In '93.

13 Q. And did you begin to teach classes any place
14 while you were employed at Digital?

15 A. Yes, I was -- in '90, '91, it was like a
16 reverse sabbatical. I took a sabbatical at a university
17 and taught a computer architecture class there.

18 Q. At Harvard?

19 A. At Harvard.

20 Q. How many classes?

21 A. One.

22 Q. Was that a one-semester course?

1 A. Yes.

2 Q. Why does it say '90, '91, if it was one
3 semester?

4 A. I did combination of teaching and research,
5 and more research in that other semester.

6 Q. What was your research in?

7 A. It was on things left over. Things that I got
8 interested in while working on hardware at Digital. I
9 remember working on clocking, on pipelines. I did a
10 paper on debugging.

11 And there's a -- maybe I did something on
12 write buffers but I can't remember.

13 Q. So you stopped working for Digital in 1993,
14 right?

15 A. Yes.

16 Q. And is that when you started teaching at the
17 University of Pennsylvania?

18 A. No. So I left --

19 Q. Sorry, sorry. I mean Princeton.

20 A. Right. So I left Digital in July of '93 and
21 drove to New Jersey and started working at Princeton. I
22 didn't start teaching until September, when they started

1 their classes.

2 Q. Have all of your classes that you've taught at
3 Princeton since 1993 been related to computers?

4 A. No. Let me explain my hesitancy. I taught
5 one writing seminar for freshman whose subject was
6 artificial intelligence, but, really, the course was
7 about writing.

8 Q. Other than that?

9 A. Other than that, no.

10 Q. Other than that one class, have all the
11 classes you've taught at Princeton been related to
12 computers?

13 A. Yes.

14 Q. Would you say you've taught more than 15
15 classes at Princeton related to computers?

16 MS. VREELAND: Objection, form.

17 A. I believe you mean different classes, not
18 times of teaching the same class.

19 Q. I actually meant times of teaching classes.
20 So if you taught the same class five times, I would
21 consider that five classes.

22 A. Okay. So since '93, that's 20 years, two

1 semesters a year, minus two semesters of sabbatical. So
2 I guess that's 38.

3 Q. So you've taught pretty much one class per
4 semester?

5 A. Yes.

6 Q. Two or three days a week?

7 A. Yes.

8 Q. On average?

9 Your degree at Yale, engineering and
10 applied science, can you describe that? Is that a
11 general engineering degree? Is there any focus there?

12 A. This is so long ago that Yale didn't have a
13 computer science department. It had -- actually, I
14 think it started its computer science -- it was getting
15 going in the computer science department just as I was
16 leaving.

17 So my degree was from the -- was there a
18 department back then? I don't think it was a school. I
19 think it was the department of engineering and applied
20 science. And everybody with any engineering interest at
21 Yale got a degree in that.

22 And my focus there was computer

1 programming. I didn't do mechanical engineering and
2 that sort of thing.

3 Q. And is it fair to say since you received your
4 Ph.D. in 1976, other than being a professor at a
5 university, the only company that you have been employed
6 by is Digital Equipment?

7 A. No, because I started at the Xerox Palo Alto
8 Research Center. So that's another company.

9 Q. Would it be fair to say the only companies
10 you've been employed by during that time frame were
11 Xerox and Digital Equipment?

12 A. That's correct.

13 Q. Did you ever have your own company? Did you
14 ever start your own company, have your own business,
15 anything like that?

16 A. No.

17 Q. You never had any businesses related to
18 Bulletin Boards?

19 A. Different Clark.

20 Q. So that's a no?

21 A. That's a no.

22 Q. Are you represented by counsel in today's

1 deposition?

2 A. Yes.

3 Q. Who?

4 A. Cindy Vreeland to my left.

5 MS. VREELAND: To be clear, I'm here on behalf
6 of EMC and VMware.

7 BY MR. RHOA:

8 Q. Are you working as a consultant for EMC and
9 VMware?

10 MS. VREELAND: Objection to the form. I think
11 he's been disclosed as a retained expert.

12 A. I don't know. I don't know if "consultant"
13 has any special meaning, but EMC sends me checks.

14 Q. When were you first retained by EMC?

15 A. In this matter?

16 Q. Yes.

17 A. I think -- I know it was last year. I think
18 it was the fall. It might have been the summer.

19 Q. When I say "this matter," I mean these six
20 IPRs?

21 A. Yes.

22 Q. Is it okay if I call these six IPRs, the "True

1 Name matter"? Is that okay? Will you know what I'm
2 talking about?

3 A. Certainly.

4 Q. So you were first retained by EMC in
5 connection with the True Name matter in 2012, at some
6 point either the summer or fall; is that right?

7 A. Yes, unless I'm wrong, and it was the spring,
8 but that's also possible.

9 Q. Were you first retained by EMC and VMware at
10 the same time?

11 A. I think so. I'm not positive.

12 Q. Who is the first company that retained you in
13 connection with the True Name matter?

14 A. I do not recall.

15 Q. Was it EMC?

16 MS. VREELAND: Objection.

17 A. I do not recall.

18 Q. When EMC retained you, were you retained by a
19 bunch of companies at the same time?

20 MS. VREELAND: Objection, form.

21 A. So I know about EMC and VMware and nobody
22 else.

1 Q. Have you been retained by any company other
2 than EMC and VMware in connection with the True Name
3 matter?

4 A. Yes, indeed, NetApp with a piece of
5 declaration for about three days in, I think --
6 actually, I don't know, maybe June, maybe May.

7 Q. Of 2013?

8 A. This year.

9 Q. And other than EMC, VMware and NetApp, have
10 you been retained by any other company in connection
11 with the True Name matter?

12 A. No.

13 Q. Who's the first person at EMC to contact you
14 regarding the True Name matter?

15 A. I'm pretty sure it was not a person from EMC
16 but one of the WilmerHale attorneys.

17 Q. Do you know who?

18 A. I believe Mr. Dichiaro to my left.

19 Q. Peter, who is sitting here?

20 A. That's the one.

21 Q. Who would you say your main contact at
22 WilmerHale is regarding this matter?

1 A. Peter Dichiaro.

2 Q. Who else do you talk to at WilmerHale about
3 this matter?

4 A. I've talked to Miss Vreeland to my left, to
5 Tyler Lacey, and three other associates whose last names
6 I don't know and I only one of whom's first name I can
7 recall.

8 Q. Do you have an agreement with either
9 WilmerHale or EMC regarding your retainer in this
10 matter?

11 A. So what do you mean by "retainer"?

12 Q. You've been retained by WilmerHale in
13 connection with this matter, right?

14 A. So EMC and VMware sends the check. So I think
15 of myself as being retained by them. But if there's
16 nuances that I'm missing...

17 Q. Do you have any type of written agreement with
18 EMC --

19 A. Yes.

20 Q. -- regarding this matter?

21 A. Yes.

22 Q. What does that agreement concern?

1 A. It is an engagement letter of a couple of
2 pages; names the matter.

3 Q. Is that engagement agreement with EMC or both
4 EMC and VMware?

5 A. I think it's with both, but I wouldn't be
6 surprised if there were actually two separate ones.

7 Q. And that would have been executed at some
8 point in the summer or fall of 2012?

9 A. Yes, unless I'm off by a season.

10 Q. And you do not have a similar engagement
11 letter with any other company regarding the True Name
12 patents other than EMC, VMware and NetApp?

13 A. There was a NetApp's one also.

14 Q. Other than those three companies, nothing
15 else?

16 A. That's right.

17 Q. What's your hourly rate in that agreement?

18 A. 625.

19 Q. \$625 per hour?

20 A. Yes.

21 Q. Is that your normal hourly rate?

22 A. It is my normal hourly rate for 2012.

1 Q. How much money have you received so far from
2 EMC in connection with this matter?

3 A. It might be 40,000. It might be 30. I just
4 don't know.

5 Q. Is it more than \$25,000, do you think?

6 A. I think it's likely more than 25.

7 Q. Is it less than \$100,000?

8 A. It it's certainly less than \$100,000.

9 Q. When was the last time you were paid by EMC?

10 MS. VREELAND: And just to be clear, your
11 questions are just EMC or not VMware or did you
12 mean it to be both?

13 MR. RHOA: I'll get there. I said "EMC." I
14 was going to follow up on VMware after he answered
15 the questions.

16 MS. VREELAND: I'll object to the form.

17 A. So their money robot sent my bank robot a
18 check in -- in the end of -- while I was on vacation.
19 So the end of July -- the end of June. Sorry.

20 Q. Now, does only EMC pay you or do both EMC and
21 VMware pay you separately?

22 A. They pay me separately.

1 Q. Is it split up equally?

2 A. Yes.

3 Q. So that amount of money you received from EMC,
4 you would also receive the same amount of money from
5 VMware?

6 MS. VREELAND: Objection to the form.

7 A. Yes.

8 Q. To your knowledge you only have one agreement
9 and that's with EMC; possibly both signed onto it?

10 A. It's -- I work with the understanding that I
11 have an agreement with both. I am uncertain as to
12 whether I have a letter from each.

13 Q. Approximately how much --

14 MS. VREELAND: I can handle this on -- on
15 redirect, if it's your preference. I just want the
16 record to be clear on the payments.

17 It is split by patent, but VMware is not
18 involved in all of the -- So it's split by IPRs,
19 but VMware is not involved in the latter four IPRs.
20 So the payments have not been equal.

21 And, you know, again, I just want the record
22 to be clear since you're asking about questions

1 that are current in the middle of.

2 If you prefer me to say things like that for
3 redirect, I will, but I want to make sure the facts
4 are correct.

5 THE WITNESS: Well, actually, I mean, there's
6 no question, but I do just split the time between
7 them.

8 MR. RHOA: I'd prefer if you handle those on
9 redirect.

10 MS. VREELAND: Okay. I'll be happy to handle
11 them on redirect.

12 BY MR. RHOA:

13 Q. Approximately how much time have you spent
14 working on this matter on behalf of the EMC and VMware
15 since you were first engaged?

16 A. Ballpark, over 100, not over 200 hours.

17 Q. Prior to the True Name matter, have you ever
18 been engaged by EMC before?

19 A. Yes.

20 Q. How many times?

21 A. Once.

22 Q. For what matter?

1 A. It was a patent lawsuit against a company
2 which was bought by HP. So it ended up being EMC
3 against HP.

4 Q. Do you remember the technology that was
5 involved in that case?

6 A. It was a duplication of files remotely.

7 Q. Who was the patent owner?

8 A. EMC.

9 Q. So EMC was suing HP or the company that HP
10 acquired for patent infringement?

11 A. Yes.

12 Q. Is that case still going on?

13 A. No, that was about 10 years ago.

14 Q. Who won?

15 A. EMC.

16 Q. On what basis?

17 A. I'm not sure how to answer that. They -- the
18 patents were found valid and infringed, and that's as
19 much as I know.

20 Q. By a jury or a judge?

21 A. A jury.

22 Q. Did you testify in that trial?

1 A. I did.

2 Q. So were you an expert witness in that case?

3 A. Yes.

4 Q. On behalf of EMC?

5 A. Yes.

6 Q. What did you testify about?

7 MS. VREELAND: Objection, form.

8 A. I testified about matters of validity and
9 infringement, but it -- I do not recall the details.
10 Also, I should say, I just recalled that -- this is a
11 little -- not exactly an engagement, but before that
12 relationship with EMC, I advised a judge in a patent
13 case on the Markman phase of a lawsuit between EMC and
14 IBM. And the deal with them was that I would bill them
15 equally after the judge approved the bill.

16 So I don't know whether you call that an
17 engagement, but EMC and IBM were both paying me to help
18 the judge.

19 Q. So you were a special master in a patent case?

20 A. I didn't have that title.

21 Q. You advised the judge on how you thought the
22 claims should be construed?

1 A. Yes.

2 Q. What judge; do you remember?

3 A. Gorton, Nathaniel Gorton in Massachusetts.

4 Q. How do you spell that?

5 A. G-O-R-T-O-N like the fish sticks.

6 Q. And what year was that approximately?

7 A. '99, maybe 2000. Maybe both.

8 Q. Have you ever done that again since that time?

9 A. No.

10 Q. And how did you advise the court to construe
11 the claims, in favor of EMC or against EMC?

12 MS. VREELAND: I'm going to object and
13 instruct the witness -- I don't know whether he had
14 a confidentiality agreement with the court or not.

15 MR. RHOA: I'll withdraw the question.

16 BY MR. RHOA:

17 Q. Do you know if your recommendation to the
18 judge was publicly-available or not?

19 A. I believe the Markman order is public.

20 Q. Is there any public record indicating that you
21 did this?

22 A. I do not know.

1 Q. Do you know the name of the case?

2 A. I think it's EMC versus -- sorry. No, I
3 don't. Actually, it was -- I forget who was suing who
4 on what basis. Maybe they were each suing the other.

5 Q. How many patents were involved?

6 A. Small number. More than one. I'm thinking
7 three.

8 Q. What was the technology again?

9 A. Computer architecture.

10 Q. How were you approached? Who approached you
11 for that matter? Did someone initiate contact with you
12 and asked you to do that? How did that come about?

13 A. A lawyer for each of the two came to my office
14 in Princeton and pitched.

15 Q. Had you ever worked with or for either of them
16 before?

17 A. No.

18 Q. How did they come about contacting you?

19 A. I often think it was because Princeton was the
20 same difference from their two offices in Delaware and
21 New York, but I actually have no idea.

22 Q. So in that prior case -- I'm switching gears

1 back to the other case that you've testified for EMC,
2 you said you testified at trial on behalf of the EMC
3 regarding validity and infringement, right?

4 A. Yes.

5 Q. Were you deposed in that case?

6 A. Yes.

7 Q. How many times?

8 A. One and 1/8th. Let me explain. There was a
9 last-minute deposition about a supplemental report and
10 each expert was -- had an hour of deposition, I think,
11 just before or maybe during the trial.

12 Q. Do you recall what judge handled that case?

13 A. That was Gorton again.

14 Q. Same judge?

15 A. Same judge.

16 Q. In the District of Massachusetts?

17 A. Yes.

18 Q. Do you know if your trial testimony was public
19 in that case?

20 A. I do not know.

21 Q. How many times have you been retained as an
22 expert witness in a patent case?

1 A. Let's say. Ballpark, 20, but it might be 25.

2 I don't think 30.

3 Q. Are those engagements identified in your CV
4 that's attached to your declaration?

5 A. No.

6 Q. Can you give me a list of all the times you've
7 been retained as an expert witness in a patent case and,
8 if you can recall, just identify the party that retained
9 you?

10 A. I could not, off the top of my head, produce
11 an accurate list. If you wish, I can prepare a list and
12 get it to you.

13 Q. Do you recall any other company that has ever
14 retained you as an expert witness in a patent case?

15 A. I recall some companies, yes.

16 Q. Please identify them.

17 A. Intel, IBM, Analog Devices, Broadcom, and
18 others whose names I do not recall.

19 Q. How many times have you testified during a
20 trial in a patent case?

21 A. Two.

22 Q. The EMC case was one?

1 A. Yes.

2 Q. What's the other?

3 A. It was Telcordia versus Cisco and possibly
4 Alcatel. There was some jockeying around -- some
5 defendants disappeared by the time of trial, but it was
6 at least Cisco.

7 Q. What court was that in?

8 A. Delaware.

9 Q. What year?

10 A. '03 -- wait, no. That would have been -- '03
11 was the other trial. I think it was '07.

12 (Witness reviewing)

13 A. Yes, more like '07, plus or minus.

14 Q. Approximately how many times have you had your
15 deposition taken in cases where you were an expert
16 witness in a patent case?

17 A. About a dozen.

18 Q. Have you ever been retained as a technical
19 expert in a case that was not a patent case?

20 A. Yes.

21 Q. By whom and how many times?

22 MS. VREELAND: Objection, form.

1 A. I will recall the best I can. There was a
2 trade -- not trade. It was a contract interpretation
3 case involving Intel and Invidia, which was a matter
4 before the Court of Chancery and did not involve
5 patents.

6 Q. Just once?

7 A. Just one non-patent engagement? No, because I
8 think there's another. Yes. There was a matter in
9 front of the FTC, where a health-care company was
10 concerned that another company was doing something
11 vaguely monopolistic and wanted to protest to the FTC.
12 And I advised that first company. I advised their
13 attorneys.

14 Q. For these IPRs, in connection with the True
15 Name matter, you've submitted six different
16 declarations, right?

17 A. Yes.

18 Q. Who prepared the first draft of each of those
19 declarations?

20 A. The attorneys prepared the first draft.

21 Q. And how did they send them to you?

22 A. Email.

1 Q. They emailed you Word documents?

2 A. Typically, yes.

3 Q. And you would redline them and send them edits
4 back; is that a fair statement?

5 A. That is part of the process. There were also
6 phone calls and sometimes, as I recall, email things
7 that weren't the same as a redlined doc file. You know,
8 change this paragraph to this paragraph, that sort of
9 thing, without being in a Word format.

10 Q. How many different emails approximately were
11 exchanged concerning drafting these six declarations?

12 A. Very, very rough guess, 100, not a thousand.

13 Q. You still have these emails, right?

14 A. Not necessarily. Things of transient
15 character, I delete.

16 Q. So do you still have copies, electronic or
17 otherwise, of these draft declarations or not?

18 A. I might have a stray one in some old email
19 attachment, but I do not have a -- I didn't keep track
20 of that. I don't have an overfull of drafts.

21 Q. You deleted all of them?

22 A. That would be my practice.

1 Q. So as you sit here today, you believe that you
2 deleted all the drafts of your declarations?

3 A. I'm not completely sure, but that's about
4 right.

5 Q. Approximately how many different drafts were
6 exchanged of your six declarations?

7 A. So I wouldn't put it that way exactly. Your
8 question makes it sound as if it was this draft and then
9 there was that draft. But actually, it was more
10 here's -- here's this change, here's that change; a
11 phone call. You know, here's the draft from Thursday.
12 It was more -- it was much less formal than that.

13 Q. Of these 100 plus emails that you mentioned,
14 have you deleted all of them or do you still have them?

15 A. I have some.

16 Q. How many approximately? Less than half or
17 more than half?

18 A. Less than half.

19 Q. And the rest you've deleted?

20 A. Yes.

21 Q. Who was your principal contact at WilmerHale
22 regarding these declarations and the draft thereof?

1 A. Mr. Dichiaro.

2 Q. Was he the one you talked to on the phone when
3 you talked about changes to the declaration or
4 declarations?

5 A. Most often, but not solely.

6 Q. Who else?

7 A. Also the associates I mentioned, Tyler,
8 Lacey -- actually, I'm not sure they're all associates
9 but I'm assuming they are. Andreas, and I don't know
10 his last name. And Corey, and I don't know his last
11 name. And Courtney and I don't know her last name.

12 Q. Did you ever send any email regarding any of
13 your six declarations that was not either sent to or
14 copied to Peter?

15 A. Probably, yes.

16 Q. Who would they have been sent to?

17 A. Some of those other lawyers. I didn't
18 necessarily copy everybody on every email.

19 Q. Are they all WilmerHale lawyers?

20 A. Yes.

21 Q. Have you ever sent any email to any attorney,
22 other than the WilmerHale attorney, regarding drafts of

1 any of your six declarations?

2 MS. VREELAND: In the EMC --

3 MR. RHOA: Regarding True Name.

4 MS. VREELAND: Well, so you're including or
5 excluding NetApp.

6 MR. RHOA: I'm not excluding NetApp. Let me
7 rephrase the question.

8 THE WITNESS: Okay.

9 MR. RHOA: Actually, if the court reporter
10 could just read back the question? And if you
11 object, just say "object."

12 MS. VREELAND: Okay.

13 MR. RHOA: Don't -- no speaking objections.
14 If you could just read back the question?

15 (Record Read)

16 MS. VREELAND: Objection to form.

17 A. No. Sorry. So in the NetApp's engagement,
18 there might have been email about the corresponding
19 declaration in this matter.

20 Q. You understand when I say the "six IPRs," I'm
21 not talking about the NetApp IPR?

22 A. Okay.

1 Q. You had six EMC IPRs, right?

2 A. Yes.

3 Q. And then there's the NetApp IPR, right?

4 A. Yes.

5 Q. Today's deposition is focused on the EMC IPRs,
6 not the NetApp IPR. Okay?

7 A. Yes.

8 Q. Did you ever receive any email from any
9 non-WilmerHale attorney regarding any of your six
10 declarations?

11 MS. VREELAND: Objection to the form of the
12 question.

13 A. So not regarding exactly, but I did have an
14 email exchange with Bill Clark, an EMC attorney, about
15 billing.

16 Q. Anyone else?

17 A. No.

18 Q. I assume you're aware these patents are
19 asserted in litigation against a variety of companies,
20 right?

21 A. Yes.

22 Q. So did you ever receive any emails or phone

1 calls or any other communications from attorneys who
2 represent any of the other companies regarding these six
3 IPRs?

4 A. No.

5 Q. Did you ever have any phone calls with any
6 such other attorneys regarding these six IPRs?

7 A. No.

8 Q. No communications whatsoever?

9 A. Yes.

10 Q. By "yes," you mean?

11 A. I agree with you.

12 Q. Did you ever have any contact with attorneys
13 for NetApp regarding the EMC IPRs prior to March of
14 2013?

15 A. No.

16 Q. Do you know if any of your declaration drafts
17 were ever circulated to attorneys who represent other
18 parties in the True Name litigations?

19 A. I do not know.

20 Q. You certainly did not, right?

21 A. I did not.

22 Q. You don't know if your -- withdraw that.

1 You don't know if the WilmerHale
2 attorneys circulated drafts of those declarations; is
3 that right?

4 A. I do not know.

5 Q. What did you do to prepare for today's
6 deposition?

7 A. I spent the last two days in Boston with the
8 WilmerHale attorneys. I studied on my own since about
9 the last week of June.

10 Q. Where did you study on your own?

11 A. Marseille.

12 Q. Is that in France?

13 A. That's the one.

14 Q. Is that the only place you went?

15 A. Yes -- no, a couple of side trips.

16 Q. Who did you meet with over the last two days
17 at WilmerHale?

18 A. Miss Vreeland, Mr. Dichiaro, Mr. Lacey, a
19 brief visit from an attorney who's name I do not recall,
20 and a phone call with an attorney who's name was David.

21 Q. What did you talk about with them?

22 MS. VREELAND: Object to the form of the

1 question. Also object on the grounds of privilege.
2 And I'm going to instruct the witness not to
3 answer. You are asking a question that invades
4 work-product.

5 BY MR. RHOA:

6 Q. Are you going to follow that instruction?

7 A. I am.

8 Q. Did you discuss with the WilmerHale attorneys
9 potential questions that may be asked during today's
10 deposition?

11 MS. VREELAND: Objection to the form of the
12 question. Objection on the ground of privilege.
13 I'm going to instruct the witness not to answer any
14 question about his conversations with WilmerHale.

15 BY MR. RHOA:

16 Q. Are you going to follow that instruction?

17 A. Yes.

18 Q. Did the WilmerHale attorneys tell you about
19 any questions that they were going to ask you during the
20 deposition?

21 MS. VREELAND: Objection to the form of the
22 question. Objection on the ground of privilege.

1 I'm going to instruct the witness not to answer any
2 questions about the conversations with WilmerHale.

3 BY MR. RHOA:

4 Q. Are you going to follow that instruction?

5 A. Yes.

6 Q. Did the WilmerHale attorneys identify any
7 weaknesses in their case to you during your meetings
8 with them over the last two days?

9 MS. VREELAND: Objection on the form of the
10 question. Objection on the ground of privilege.
11 I'm going to instruct the witness not to answer any
12 questions about conversations with WilmerHale.

13 And Mr. Rhoa, if you think the conversations
14 between counsel and the expert are discoverable and
15 not privileged, could you please identify your
16 basis for that position?

17 MR. RHOA: I do think some of your objections
18 are improper. He's a testifying expert. Some of
19 these questions call for yes/no answers. Even if
20 work-product did apply, it wouldn't get to
21 work-product. Certainly there's no attorney-client
22 privilege relationship here.

1 BY MR. RHOA:

2 Q. What documents did you look at with the
3 WilmerHale attorneys over the last couple of days?

4 MS. VREELAND: Objection to the form of the
5 question. Objection on the grounds of
6 work-product. The documents that we would choose
7 to show him would reflect our work-product.

8 Again, he's happy to answer any questions
9 about his declaration, but we're not going to let
10 you invade the work-product privilege.

11 BY MR. RHOA:

12 Q. Dr. Clark, you are a testifying expert here,
13 right?

14 A. Yes.

15 Q. Which patents did you focus on with the
16 WilmerHale attorneys in the last two days?

17 MS. VREELAND: Object to the form of the
18 question. Object on the grounds of work-product
19 privilege. Again, what counsel selects to focus on
20 with Dr. Clark is within our work-product
21 privilege, and we are not going to waive the
22 work-product privilege.

1 If you think these questions are appropriate,
2 then you'll need to identify authority that makes
3 this discoverable in this matter.

4 MR. RHOA: I didn't hear an instruction not to
5 answer that.

6 MS. VREELAND: I instruct him not to answer.

7 BY MR. RHOA:

8 Q. Are you going to follow that instruction?

9 A. Yes.

10 Q. Are you going to follow all these instructions
11 not to answer?

12 A. Yes.

13 MS. VREELAND: Is it your position we'll be
14 able to ask your witness questions about your
15 interactions with the expert witness you retain?

16 MR. RHOA: I'm asking the questions to the
17 witness.

18 BY MR. RHOA:

19 Q. These last two meetings with the WilmerHale
20 attorneys, were they full-day meetings, half-day
21 meetings? How long were they?

22 A. Full day.

1 Q. Were they here --

2 A. Yes.

3 Q. -- in Boston?

4 A. Yes.

5 Q. Do you recall what documents you looked at
6 over the last two days in preparation for this
7 deposition?

8 MS. VREELAND: You may answer yes or no.

9 A. Yes.

10 Q. What documents?

11 MS. VREELAND: Object, again, to the question
12 on the grounds of work-product privilege. The
13 documents that we select to show him reflect our
14 work-product. We are not going to waive the
15 work-product privilege.

16 If you are aware of authority that you think
17 makes that appropriate question, please identify it
18 for me; otherwise, I'm going to instruct the
19 witness not to answer.

20 MR. RHOA: Are you or are you not going to
21 instruct the witness not to answer?

22 MS. VREELAND: Yes. I am going to instruct

1 the witness not to answer unless you can identify
2 authority that makes that an appropriate question.

3 BY MR. RHOA:

4 Q. Are you going to follow that instruction not
5 to answer?

6 A. Yes.

7 Q. You understand there are six True Name patents
8 involved in these six IPRs, right?

9 A. Yes.

10 Q. When was the first time you saw any of these
11 patents?

12 A. When I was first -- when I was first engaged.

13 Q. So that would be 2012?

14 A. Yes.

15 Q. What's your understanding of why EMC/VMware
16 retained you in this matter?

17 MS. VREELAND: Objection to the form of the
18 question.

19 A. I'm known to the WilmerHale attorneys, I
20 guess.

21 Q. Do you have an understanding of what the
22 purpose is of your declarations in these six IPRs?

1 MS. VREELAND: Objection, form.

2 A. I have a lay understanding.

3 Q. What's your understanding?

4 A. It is to support the petitions to the Patent
5 Office.

6 Q. To what end?

7 A. The greater success. A requirement. I don't
8 know. I don't know.

9 Q. You're trying to invalidate the patents?

10 MS. VREELAND: Objection, form.

11 A. I am supplying opinions about the validity of
12 the patents.

13 Q. And those opinions say that all the challenged
14 claims are invalid, right?

15 A. Yes.

16 Q. You want to take a break or you want to keep
17 going.

18 A. I'm sorry?

19 Q. Do you want to take a break or keep going?

20 A. A small break would be fine.

21 Q. Okay.

22 (Short Recess)

1 BY MR. RHOA:

2 Q. Dr. Clark, are you ready to go?

3 A. Yes.

4 MR. RHOA: I would like to introduce Exhibit
5 EMC 1004.

6 (Exhibit No. 1004 marked for identification)

7 BY MR. RHOA:

8 Q. Do you have Exhibit 1004 in front of you?

9 A. Yes.

10 Q. What is this?

11 A. This is the Kantor reference.

12 Q. So if I refer to "Kantor," K-A-N-T-O-R, today,
13 will you understand I'm talking about Exhibit 1004?

14 A. I will.

15 Q. Did you review Kantor in preparation for
16 today's deposition?

17 A. Yes.

18 Q. And you already have Exhibit 1009 in front of
19 you; is that right?

20 A. Yes.

21 Q. I would like to introduce Exhibit 1028.

22 (Exhibit No. 1028 marked for identification)

1 BY MR. RHOA:

2 Q. Do you have Exhibit 1028 in front of you?

3 A. Yes.

4 Q. What is this?

5 A. It's the Satyanarayanan II reference, Roman
6 numeral II.

7 Q. How do you spell that?

8 A. S-A-T-Y-A -- you want the whole name?

9 Q. Do you spell that S-A-T-Y-A-N-A-R-A-Y-A-N-A-N?

10 A. Satyanarayanan, yes.

11 MR. RHOA: I would like to introduce EMC 1001.

12 (Exhibit No. 1001 marked for identification)

13 BY MR. RHOA:

14 Q. Do you have Exhibit 1001 in front of you?

15 A. Yes.

16 Q. What is it?

17 A. It is the '096 patent.

18 Q. If I would refer to the '096 patent today,
19 will you understand that I'm talking about Exhibit EMC
20 1001?

21 A. I will.

22 MR. RHOA: I would like to introduce EMC 1029.

1 (Exhibit No. 1029 marked for identification)

2 MR. RHOA: Can we go off the record for a
3 second?

4 (Off Record Discussion)

5 MR. RHOA: We can go back on. Thank you.

6 BY MR. RHOA:

7 Q. Do you have Exhibit 1029 in front of you?

8 A. Yes.

9 Q. What is Exhibit 1029?

10 A. It is the claim chart for Kantor and the '096
11 patent.

12 Q. Did you review all five exhibits that you have
13 in front of you in preparation for today's deposition?

14 MS. VREELAND: Objection to form.

15 A. Yes.

16 MR. RHOA: I would like to introduce
17 Exhibit 2004.

18 (Exhibit No. 2004 marked for identification)

19 BY MR. RHOA:

20 Q. Do you have Exhibit 2004 in front of you?

21 A. Yes.

22 Q. Do you know what Exhibit 2004 is?

1 (Witness reviewing)

2 A. I believe this is a specification of the
3 format of a ZIP file.

4 Q. From 1990?

5 MS. VREELAND: Objection.

6 (Witness reviewing)

7 MS. VREELAND: I'm also going to object that
8 it's outside the scope of this declaration.

9 A. The front page has an arrow pointing at a
10 version from 1990. I was unable to see, on the document
11 itself, a date for a number that corresponded to the
12 number on the cover.

13 Q. Would this document be referred to as a ZIP
14 file standard or ZIP file specification? What's the
15 proper way to refer to it?

16 MS. VREELAND: Objection to form. Object
17 outside the scope of his declaration.

18 A. I'm happy with specification. I'm not -- I
19 think it's some variety of standard also.

20 Q. If I say "standard" or "specification" for a
21 ZIP file, will you understand I'm talking about
22 Exhibit 2004 at today's deposition?

1 A. I will.

2 Q. Do you recall ever reviewing ZIP file
3 standards or specifications in the late '80s or early
4 '90s?

5 A. I do not recall that.

6 Q. Do you recall the first time you saw this
7 particular document in Exhibit 2004 was?

8 A. I don't know that I've seen this exact thing,
9 but I have seen a version of this in preparation -- in
10 my preparation for the deposition.

11 Q. So you've seen a version of the 1990 ZIP file
12 specifications?

13 A. I think that is right.

14 Q. Do you have any reason to believe that
15 Exhibit 2004 is not the ZIP file specifications or
16 standard that was in place as of 1990?

17 MS. VREELAND: Objection.

18 A. I don't think I have any reason to doubt that.
19 Sorry. Would you ask --

20 THE WITNESS: Can I have that question again?

21 (Record Read)

22 A. I do not have such a reason.

1 Q. Do you understand the content of this standard
2 or specification?

3 MS. VREELAND: Objection.

4 A. Broadly, yes, but not in detail.

5 Q. Did any of the classes that you have ever
6 taught involve ZIP files?

7 MS. VREELAND: Object.

8 A. Possibly as a tool, but I don't think my
9 classes have touched on the ZIP file as a concept, I
10 think.

11 Q. How about the structure?

12 A. Not that I recall.

13 Q. Were ZIP files known in the art prior to
14 April 11, 1995?

15 MS. VREELAND: Objection.

16 A. '95, yes.

17 Q. Do you have an opinion on what is the level of
18 ordinary skill in the art related to the True Name
19 patents?

20 A. Yes.

21 Q. What is it?

22 A. I would say a person with a degree at the

1 bachelor's or master's level in computer science or
2 computer engineering with some, four, five years of
3 experience in the industry.

4 Q. What if someone had a Ph.D. in the field but
5 no work experience?

6 A. I think people can -- there are probably
7 alternate ways to get degree of -- sorry. Alternate
8 ways to get to being a person of skill in the art
9 including more degrees and less work or working at a lab
10 or university. Something like that.

11 Q. Do you know whether the ZIP file standard has
12 changed significantly from 1990 to the present?

13 MS. VREELAND: Objection.

14 A. I do not know.

15 Q. Do you have an understanding of what the
16 structure is of the ZIP file as of the early 1990s?

17 MS. VREELAND: Objection.

18 A. I have a general understanding, not a detailed
19 one.

20 Q. What is your understanding?

21 MS. VREELAND: Objection to form.

22 A. It is a single file that has, as its parts,

1 other files and includes a directory of those.

2 Q. Are those files compressed or not compressed?

3 A. Those files are typically compressed.

4 Q. What is included in the directory?

5 A. I think it's probably right here (Indicating).

6 Can I...?

7 Q. What document are you looking at?

8 A. I'm looking at Exhibit 2004. And I'm looking
9 at the first page and part B, the central directory
10 structure, and there are various fields in the file
11 header.

12 (Witness reviewing)

13 A. So I do not -- this -- this thing has a lot of
14 parts and I would need to study it in more detail.

15 Q. So is it your understanding that the central
16 directory includes the data under letter B, under the
17 heading "central directory structure" on pages 2 and 3
18 of Exhibit 2004?

19 MS. VREELAND: Objection to form. Objection
20 outside the scope.

21 A. So it looks like, just looking at this
22 quickly, pages, I would say, one and two, have the

1 format of the central directory, and then subsequent
2 pages appear to have explanations of what the fields
3 mean.

4 Q. When you're referring to page 1, you're
5 talking about upper right corner says 1 of 13?

6 A. Yes.

7 Q. And page 2 is, upper right corner, page 2 of
8 13?

9 A. Yes.

10 Q. So then the central directory would include
11 compression data, filename, lengths, CRC values, dates,
12 times, compression methods, offsets, filenames,
13 comments; is that right?

14 MS. VREELAND: Objection to form. Objection
15 outside the scope.

16 A. I think you were reading some things from this
17 page. So I -- that seems right.

18 (Attorney Clark enters room)

19 BY MR. RHOA:

20 Q. Does a ZIP file also have local headers?

21 A. ZIP files, constituent files, have their own
22 headers.

1 Q. What do you mean by that?

2 A. So each of the contained files has its own
3 header.

4 Q. When you refer to the inner -- let me rephrase
5 that. When you refer to an inner file of a ZIP file,
6 are you referring to the file itself or the file in
7 combination with the local header?

8 MS. VREELAND: Objection to form and also
9 object outside the scope.

10 A. So I meant the file itself and not the local
11 file header which is a zip thing.

12 Q. If there was a ZIP file that had 10 compressed
13 inner files in it, do you have an understanding of how
14 many local file headers there would be in that ZIP file?

15 MS. VREELAND: Objection to form. Objection
16 outside the scope.

17 A. It would have one for each file, so 10.

18 Q. Are the local file headers located at the
19 beginning of the respective files?

20 MS. VREELAND: Same objection.

21 A. I would need to read this in more detail.

22 (Indicating)

1 Q. Do you have an understanding of what data is
2 contained in the local file headers?

3 A. I can read the names of the fields here, and
4 then, I think, find out what exactly each thing is by
5 looking at the meaning of the explanation of fields
6 portion that starts on page 2.

7 Q. So the local headers include the information
8 under the heading A. Local file: (sic) on page 1 of 13
9 on Exhibit 2004; is that right?

10 MS. VREELAND: Objection to the form.

11 Objection outside the scope.

12 A. That is my interpretation of this document.

13 Q. So the local file headers would include
14 information such as header signatures, version needed to
15 extract, compression method, time, date, CRC value,
16 compress information, filename length, filename; is that
17 right?

18 MS. VREELAND: Objection to form. Objection
19 outside the scope.

20 A. I see those things you mentioned all on this
21 list on page 1 under "local file header."

22 Q. So is it your underring that a local file

1 header would include that information?

2 MS. VREELAND: Objection to form. Objection
3 outside the scope.

4 A. This is what this document is saying.

5 Q. For a ZIP file, right?

6 A. For a ZIP file.

7 Q. So is it fair to say a ZIP file includes a
8 central directory, local headers, and compressed inner
9 files?

10 MS. VREELAND: Objection.

11 A. I think that's almost there. I'm not sure
12 that that the compression part is required, but I think
13 that's generally fair.

14 Q. So is it safe to say that a ZIP file includes
15 a central directory, local headers, and inner files?

16 MS. VREELAND: Objection.

17 A. Yes.

18 Q. Do you know for sure whether the inner files
19 in a ZIP file have to be compressed or whether
20 compression is optional?

21 A. I don't have a firm understanding of that.

22 Q. And what you've been stating about ZIP files

1 would have been true in the early 1990's?

2 MS. VREELAND: Objection to form. Objection
3 outside the scope.

4 A. Yes.

5 Q. Does a ZIP file include data regarding who
6 made the ZIP file?

7 MS. VREELAND: Objection to form. Objection
8 outside the scope.

9 A. I don't understand the idea of who made the
10 file.

11 Q. Does a ZIP file include data indicating when
12 the ZIP file was made?

13 MS. VREELAND: Objection to form. Objection
14 outside the scope.

15 A. I will consult the directory structure and see
16 if we see that.

17 Q. Go ahead.

18 (Witness reviewing)

19 A. So while it is not spelled out exactly, the
20 central directory includes fields called last mod time
21 and last mod date. And we learn that the time and date
22 fields are the standard MS-DOS format. And last mod, I

1 interpret to mean last modification.

2 Q. Does the ZIP file include data regarding the
3 order in which the files are in -- let me rephrase that.

4 Does a ZIP file contain information
5 regarding the order in which the inner files are in the
6 ZIP file?

7 MS. VREELAND: Objection outside the scope.

8 A. So there is at least the actual order within
9 the ZIP file. There is a ZIP file. There's no doubt
10 about which one is the second ZIP file -- second inner
11 file.

12 I don't know if there's further
13 information about -- I think there might be. I need to
14 look.

15 (Witness reviewing)

16 A. So the thing I see that's related to your
17 question is that in the central directory, there's a
18 record for each file that includes the relative offset
19 of the local header. And I read that the relative
20 offset of the local header is the offset from the start
21 of the first disk on which this file appears to where
22 the local header should be found.

1 So that is related to the order in which
2 the files appear. It's not exactly the order.

3 Q. One could figure the order out from that?

4 MS. VREELAND: Objection outside the scope.

5 A. Yes.

6 Q. Does the ZIP file contain CRC values?

7 MS. VREELAND: Objection outside the scope.

8 A. Yes.

9 Q. What is a CRC, all caps?

10 A. It stands for a cyclic redundancy check. It
11 is a code that is produced by dividing your large bit
12 string by a known polynomial, a known binary polynomial,
13 and saving the remainder.

14 Q. Do all CRC functions have the same algorithm?

15 A. No.

16 Q. Please explain.

17 A. So it's a general idea. And you need to
18 particularize it by the exact polynomial which would
19 imply the degree of the polynomial and the -- that might
20 be it, actually.

21 So maybe the algorithm is the same, but
22 it's the polynomial parameter that can be different.

1 Q. So there's lots of different types of CRCs?

2 A. Let me back up a bit. I'm not sure there
3 aren't other ways, other algorithmic ways, to accomplish
4 this function. But I do understand that this particular
5 one, CRC-32, I guess, was the standard with a particular
6 degree 32 polynomial.

7 Q. So if someone said "CRC-32," like in the ZIP
8 file standard, you would know what that CRC function
9 was?

10 MS. VREELAND: Objection outside the scope.

11 A. Yes.

12 Q. Kantor refers to CRCs, right?

13 A. Yes.

14 Q. Are the CRCs in Kantor cyclic redundancy
15 checks as well?

16 A. I think that's what it stands for. It might
17 be cyclic redundancy codes sometimes.

18 Q. Are the CRCs referred to in Kantor same as the
19 CRCs in Exhibit 2004?

20 A. Yes.

21 Q. Where in a ZIP file would the CRC values have
22 been located as of the early portion of 1995?

1 MS. VREELAND: Objection outside the scope.

2 A. So looking at this document, Exhibit 2004
3 again, the local file header has some other things, and
4 then a CRC-32, and then some more things. So roughly in
5 the middle of the header would be the CRC for that file.

6 And I don't know if there's another one
7 for the -- for the central directory. I think not.

8 (Witness reviewing)

9 A. Sorry, sorry. So there's one in the local
10 file header, and then in the central directory, there's
11 another one which is just a copy for each file.

12 Q. So there's a CRC value in each local header
13 for the corresponding inner files, right?

14 A. Yes.

15 Q. And what makes up the CRC value in the central
16 directory?

17 MS. VREELAND: Objection outside the scope.

18 BY MR. RHOA:

19 Q. How is it different?

20 A. I believe it is not different. It is just a
21 copy.

22 Q. Of all the ones from the local headers?

1 A. Yes.

2 Q. When are the CRC values in a ZIP file
3 calculated?

4 MS. VREELAND: Objection outside the scope.

5 A. That, I do not know. Before the ZIP file is
6 created. That's all I know.

7 Q. So the CRC values in a ZIP file would have to
8 be created before the ZIP file is formed, right?

9 MS. VREELAND: Objection outside the form.

10 A. Actually, I'm not sure of that either. It
11 could be that the creation of the ZIP file involves a
12 calculation of the CRCs.

13 Q. Certainly the CRC values are not calculated
14 after the ZIP file is formed, right?

15 MS. VREELAND: Objection outside the scope.

16 A. That -- that's my understanding.

17 Q. Your understanding is that the CRC values are
18 calculated either before or during the formation of the
19 ZIP file?

20 MS. VREELAND: Objection outside the scope.

21 A. So I'm just inferring from this document if
22 you have a ZIP file that has the structure, and then the

1 CRC-32 in there, and it got there sometime. But, you
2 know, not after the thing was created because then it
3 wouldn't be a ZIP file.

4 Q. How are the CRC values in a ZIP file created?

5 MS. VREELAND: Objection outside the scope.

6 A. So this is --

7 MS. VREELAND: Objection to form as well.

8 A. -- a polynomial division where you take the
9 string that is to be compressed -- well, the map of it
10 is what is the remainder if you treat that giant string
11 as itself a polynomial. If you divide that by the
12 specific degree, 32 polynomial. It's just like numbers.
13 What's the remainder after you divide some big number by
14 some small number. Only it's with polynomials.

15 And the method involves shifting and
16 EXORing through the -- through the string.

17 Q. What does the CRC apply to?

18 MS. VREELAND: Objection outside the scope.

19 A. Other -- so it has many -- actually, I don't
20 understand your question.

21 Q. Let's take a local header in a ZIP file.

22 Okay?

1 A. Okay.

2 Q. This is in the early 1990s. Okay?

3 A. Yes.

4 Q. That local header includes a CRC value, right?

5 MS. VREELAND: Objection outside the scope.

6 A. Yes.

7 Q. Was that CRC value obtained by applying a CRC
8 to the inner file before that file was compressed and
9 packaged into the ZIP file?

10 MS. VREELAND: Objection outside the scope.

11 A. So I suppose you could have a CRC-32 of the
12 compressed file, but I think it's CRC of the
13 uncompressed file.

14 Q. So it's your understanding that the CRC value
15 in the local header was calculated by applying a CRC to
16 the inner file before that file was compressed and
17 packaged into the ZIP file?

18 MS. VREELAND: Objection outside the scope.

19 A. I think that's right.

20 Q. To come up with the CRC, that's -- let me
21 rephrase that.

22 To come up with the CRC value that is in

1 a local header of a ZIP file, is the CRC applied to
2 anything other than the corresponding inner file?

3 MS. VREELAND: Objection outside the scope.

4 A. I believe not.

5 Q. So that CRC function was not applied to
6 filenames, field lengths, dates, names, stuff like that?

7 MS. VREELAND: Objection outside the scope.

8 A. That's my understanding.

9 Q. Would it have been easy for one of ordinary
10 skill in this art to have modified CRC values in a ZIP
11 file prior to April 11, 1995?

12 MS. VREELAND: Objection outside the scope.

13 Objection to form as well.

14 A. Do you mean insert an incorrect CRC?

15 Q. Either insert an incorrect CRC value or go in
16 after the ZIP file was formed and changed it?

17 MS. VREELAND: Objection to form. Objection
18 outside the scope.

19 A. I'd love to say that anything is possible, but
20 that seems at least peculiar.

21 Q. You've never heard of anyone doing that?

22 A. No.

1 Q. Have you ever done that?

2 A. No.

3 Q. Would you know how to do that?

4 MS. VREELAND: Objection to form. Objection
5 outside the scope.

6 A. Not without some research.

7 Q. Do you think it would be possible to figure
8 that out or not?

9 MS. VREELAND: Objection to form. Objection
10 outside the scope.

11 A. So just speculating, but to change some bits
12 into some other bits in some file, I don't think is
13 impossible. I just don't know how to do it.

14 Q. As of the early 1990's, did ZIP files contain
15 file size data?

16 MS. VREELAND: Objection to form. Objection
17 outside the scope.

18 A. Taking this as on its face, I see a size of
19 the compressed version and a size of the uncompressed
20 version both at four bytes, so yes.

21 Q. So that file size data is present in both the
22 local headers as well as the central directory; is that

1 right?

2 A. Let me check.

3 MS. VREELAND: Objection outside the scope.

4 A. Yes, the sizes are in both places.

5 Q. Do those sizes indicate file length?

6 MS. VREELAND: Objection outside the scope.

7 A. Yes, and probably in number of bytes, but
8 let's just see. The sizes in this what are the fields
9 anyway section on page 3.

10 (Interruption from court reporter)

11 THE WITNESS: I forgot what I said.

12 A. But if you look on page 3, the compressed size
13 and uncompressed size, both say the size of the file
14 uncompressed. Compressed and uncompressed,
15 respectively, without saying what the units are but the
16 conventional units or bytes.

17 Q. So would that file size data indicate the
18 length of the file?

19 A. Yes.

20 Q. What else would it indicate?

21 MS. VREELAND: Objection outside the scope and
22 objection to form.

1 MR. RHOA: Let me rephrase that.

2 BY MR. RHOA:

3 Q. What else would it indicate about the size of
4 the file?

5 MS. VREELAND: Objection outside the scope.
6 Objection to form.

7 A. Well, let's see. The compressed size compared
8 to the uncompressed size would give you an idea of how
9 well the compression did on that file. I can't, right
10 now, imagine other things you would learn from those
11 numbers.

12 Q. As of the early 1990s, did zip files include
13 data regarding filenames?

14 MS. VREELAND: Objection outside the scope.
15 Objection to form.

16 A. Again, taking this file as zip gospel, there
17 is an indication of the filename in the local file
18 header and again in the central directory.

19 Q. What exactly is a filename in that respect?

20 A. Let's see if there's some intelligence about
21 that. So filename is explained in this document on
22 page 4. "The name of the file, with optional relative

1 path. The path stored should not contain a drive or
2 device letter, or a leading slash. All slashes should
3 be forward slashes '/' as opposed to backward slashes
4 '\ ' for compatibility with Amiga and Unix file systems,
5 etc.".

6 So it sound like a conventional idea of a
7 filename possibly with its path.

8 Q. Where did that filename come from?

9 MS. VREELAND: Objection, form. Objection
10 outside the scope.

11 A. So sometimes filenames are bestowed by people
12 and sometimes by computer programs.

13 Q. Is it your understanding that that would
14 typically be a filename that a person gave a file before
15 that file was packaged up and put in a ZIP file?

16 MS. VREELAND: Objection outside the scope.

17 A. So I can make a ZIP file of some of my files
18 that I named and that would be completely true. I could
19 make a ZIP file of some things with inscrutable names
20 given them by some program and then that would be false.

21 Q. In your first scenario, where you provided the
22 names, those would be the filenames that are in the ZIP

1 file, right?

2 MS. VREELAND: Objection outside the scope.

3 A. That is my understanding except that I read
4 that the -- there was -- there is an optional path
5 before the filename.

6 Q. So the filename's there and then it's possible
7 that there's this path in there?

8 A. Yes.

9 Q. Please turn to the Kantor reference, which is
10 Exhibit 1004, and tell me when you have that in front of
11 you.

12 A. I do.

13 Q. Please turn to page 55.

14 A. I am there.

15 Q. In the lower half of page 55, there is a
16 procedure called "z = make a 'Zipfile file contents
17 signature' for (each) Zipfile."

18 Do you see that?

19 A. Yes.

20 Q. Are you familiar with that procedure?

21 A. Yes.

22 Q. If I refer to the "Z procedure" or the "ZCS

1 procedure," or the "Zip contents signature" today, will
2 you understand that that is the procedure I'm referring
3 to?

4 A. Yes, although if you just say "Z," I might ask
5 you for clarification.

6 Q. So Kantor forms a ZIP file contents signature
7 or ZCS in this procedure, right?

8 A. Yes.

9 Q. And in your declaration, you contend that the
10 ZCS is a data item identifier; is that right?

11 A. Because the terminology shifts between
12 patents, I'm -- I'd rather have a specific patent in
13 mind and maybe the declaration also.

14 Q. How does Kantor form this ZIP file contents
15 signature in this Z procedure?

16 A. He computes two, 32 bit things: The first by
17 adding together modulo 2 to the 32; the individual CRCs
18 of the inner files. And the other 32 bit number he gets
19 by adding together the lengths, the uncompressed
20 lengths, of the file of the inner files.

21 So he ends up with some of the CRCs
22 modulo 2 to the 32 and some of the lengths.

1 Q. And how does Kantor get those CRC values?

2 A. He pulls them out of the ZIP file because
3 there they are. He could compute them, but why?

4 Q. Does he pull them out of the ZIP file or does
5 he read them from the ZIP file?

6 A. Oh --

7 MS. VREELAND: Objection to form.

8 A. -- I don't distinguish those ideas.

9 Q. You think those are about the same thing?

10 A. He needs to get them out of the file by some
11 mechanism.

12 Q. After Kantor reads the CRC values from the ZIP
13 file, are those CRC values still in the ZIP file?

14 A. Yes.

15 Q. So he doesn't pull them out?

16 A. Right -- beg your pardon. It's my fault
17 completely "pull them out."

18 Q. He does not pull them out?

19 A. Yeah, he makes a copy.

20 Q. He reads them from --

21 A. Right.

22 Q. He reads them from the ZIP file, right?

1 A. Yes.

2 Q. They are not extracted from the ZIP file,
3 right?

4 A. Right.

5 Q. Are the inner files ever extracted from the
6 ZIP file in determining the ZIP file contents signature
7 or ZCS?

8 MS. VREELAND: Objection to form.

9 A. I'm not sure.

10 Q. Is it your understanding that when Kantor
11 calculates the ZIP file contents signature or ZCS, the
12 ZIP file itself stays intact, but he just reads certain
13 data from it; namely, the CRC values and the length
14 values?

15 MS. VREELAND: Objection to form.

16 A. I believe that is what happens, the
17 uncompressed length values.

18 Q. And what do the uncompressed length values
19 refer to?

20 A. That is the length of the individual file
21 before compression.

22 Q. Before the files were compressed and put into

1 a ZIP?

2 A. Yes.

3 Q. Can you please turn to the '096 patent which
4 is Exhibit EMC 1001?

5 A. Yes.

6 Q. Do you have EMC Exhibit 1001, which is the
7 '096 patent, in front of you?

8 A. Yes.

9 Q. And you've reviewed this in preparation of
10 today's deposition?

11 A. Yes.

12 Q. And you're familiar with this?

13 A. Yes -- I -- I beg your pardon. To be
14 completely precise, I reviewed the specification of this
15 patent in another patent, but I review the asserted
16 claims of this patent.

17 Q. What specification did you review?

18 A. '191 (sic).

19 Q. Would that be '791?

20 A. Almost positive. The one that ends with the
21 91.

22 Q. You can look at your materials.

1 a Table of Contents; and there's a copy of the patent;
2 there's the petition; my declaration; the claim chart or
3 charts for the -- for the relevant grounds; the patent
4 owners' preliminary response; the decision. And then
5 some odd things for some of them, like this one
6 apparently has a piece of prosecution history
7 (Indicating).

8 But mostly, it's the things I said for
9 each of the five patents. And then the last binder is
10 the copy of the -- copies of the prior art; namely,
11 Woodhill, Fisher, Langer, Kantor and Satya (sic).

12 Q. Do you have anything in those three binders
13 that has not been filed with the Patent Office in
14 connection with these six IPRs?

15 A. Well, the table is just the table and the
16 Table of Contents, I'm sure, were not filed.

17 Q. Other than that?

18 A. I don't think so.

19 Q. Who prepared those three black binders?

20 A. Mr. Lacey.

21 Q. Do you have any handwritten notes in any of
22 those three black binders?

1 A. I don't have writing. I have the occasional
2 underline, I think.

3 Q. Do you have any underlining or highlighting in
4 any of the patents?

5 A. In these binders?

6 Q. Yes.

7 A. Zero, none.

8 Q. Where is your highlighting and underlining?

9 A. I have a vague memory of not highlighting but
10 underlining a couple of words here and there, maybe in
11 the declaration; maybe in the petition.

12 Q. As you sit here right now, you don't know
13 exactly where they were?

14 A. It was a handful of things.

15 MS. VREELAND: To be clear, we would have no
16 objection to you inspecting the notebook, if you
17 would like to.

18 BY MR. RHOA:

19 Q. So you're familiar with the '096 patent,
20 right?

21 A. Yes.

22 Q. What is your interpretation of "hash" as used

1 in the '096 patent?

2 A. You said "hash" not "cache"?

3 Q. Hash, H as in Hector, A as in Apple, S as in
4 Sam, H --

5 A. That's the one. Just the ordinary
6 understanding, that it's a small computed -- a stand-in
7 for a large amount of data that's computed to be a small
8 amount of data -- that's a terrible answer.

9 I don't think it's any different from a
10 general idea of a hash which is the result of computing
11 with a large input and producing a small output.

12 Q. So that's what you would say your
13 understanding of a hash is, as used in the '096 patent?

14 A. Yes, and used generally.

15 Q. As of early 1995, how many different hashes
16 would you say were known in the art?

17 A. Well, it's a very common technique with many,
18 many applications. I would say maybe millions. Known
19 in the art? Known in the art?

20 What do you mean by "known in the art"?

21 Q. People of ordinary skill in the art would be
22 able to find with reasonable diligence if they were

1 looking for it?

2 A. Do you mean a particular computational method
3 to produce a hash, how many of those were known?

4 Q. Yes, let's take that.

5 A. So actually, I have no idea, but lots.

6 Q. Thousands?

7 A. Maybe.

8 Q. Maybe millions?

9 A. No, I doubt it would be millions.

10 Q. But you would say in the thousands?

11 A. Just a speculative guess.

12 Q. Are there any categories you could break the
13 hashes into that were available in early 1995?

14 A. I don't know.

15 Q. Do you contend that a CRC is a hash?

16 A. Yes.

17 Q. Do you contend that modulo, M-O-D-U-L-O,
18 addition 32 is a hash?

19 A. If you meant modulo 2 to the 32, then yes.
20 Well, actually modulo 32 would also be a hash, but it
21 would be a 5-bit hash.

22 Q. Does Kantor describe a modulo addition?

1 A. Yes.

2 Q. What type of modulo addition does Kantor
3 describe?

4 A. Modulo 2 to the 32.

5 Q. So when we say "modulo 2^{32} ," that's 2
6 superscript 32; is that right?

7 A. Yes.

8 Q. So do you contend that modulo 2 to the 32 is a
9 hash?

10 A. Yes.

11 Q. What's the difference between modulo 2 to the
12 32 addition compared to a CRC?

13 A. So sticking with CRC-32, both give you a hash
14 of a variable size data input that is 32 bits in size.
15 They're just computed differently. The additional one
16 is just by adding and not caring about overflow.

17 And the CRC one is done by this
18 polynomial division with shifts in EXORs.

19 Q. Would you consider those to be different
20 categories of hashes?

21 MS. VREELAND: Objection outside the scope.

22 A. I don't have a good opinion about that.

1 Q. Can you identify all hashes that are described
2 in the '096 patent?

3 A. I can, I think, if you let me go through the
4 specification.

5 Q. Sure.

6 (Witness reviewing)

7 A. So the first one is in Figure 10(a) --
8 actually, the first two. One is the MD message digress
9 function referred to in block S212. And here's another
10 one in S214 which is, I think, a typographical error.
11 It says "length modulo 32."

12 And I'm quite confident that what they
13 meant was length modulo 2 to the 32.

14 Q. Why do you believe that?

15 A. Length modulo 32 would produce a 5-bit value.
16 It would be of little use. And modulo 2 to the 32 would
17 be a 2^{32} divide.

18 Q. And what bit value does the specification
19 describe?

20 A. I think they repeat that error, actually.
21 We'll find that .

22 (Witness reviewing)

1 A. So the next is in column 12, about line 19.

2 "A True Name is computed using a function, MD, which
3 reduces a data block B of arbitrary length to a
4 relatively small, fixed size identifier."

5 And "MD," is a -- used here in some
6 generic sense because then the -- the patent goes on to
7 say what properties it must have and lists them. And I
8 won't -- I gather you don't want me to read the
9 properties that it must have?

10 And then here are some examples of
11 functions that would obey the properties, and they're
12 MD4, MD5, and SHA.

13 Q. Are all three of those hashes?

14 A. Yes.

15 Q. Are MD5, MD4, and SHA all cryptographic
16 hashes?

17 A. I think that's right.

18 Q. What about modulo 2^{32} addition?

19 A. I think not.

20 Q. What's the difference between a cryptographic
21 hash and a hash that is not cryptographic?

22 A. I cannot give a good math answer. I'm sure

1 there is one. My rough idea is that in a cryptographic
2 hash, it is very hard to make another set of data that
3 has the same hash. With modulo 2^{32} addition, it's very
4 easy to make another set of data that has the same hash.

5 I believe there's math about this with
6 more parts. I've just given you my rough understanding.

7 Q. Do you have any understanding of whether
8 cryptographic hashes and non-cryptographic hashes differ
9 from each other with respect to reversibility?

10 MS. VREELAND: Objection to form.

11 A. What do you mean by "reversibility"?

12 Q. Whether they're one-way hashes or either go
13 one way and come back?

14 MS. VREELAND: Objection to form.

15 A. So it is, in general, impossible to take a
16 hash and get back the constituent bits. So you must
17 mean something different.

18 Q. So for any hash, a requirement of a hash is
19 that you cannot apply the hash function, get the result,
20 but you cannot get back the original bits?

21 A. That is, in general, true.

22 Q. And that would be how one with ordinary skill

1 in the art in the early 1990's would interpret a hash?

2 A. Yes.

3 Q. Other than the MD4, MD5, SHA, and modulo 2^{32} ,
4 are you aware of any other hashes that are described in
5 the specification of the '096 patent?

6 A. So I did stop when you asked your question
7 five minutes ago --

8 Q. As you sit here right now, do you recall any
9 other hashes being described in the '096 patent?

10 A. I do not.

11 Q. Let's go back to Kantor page -- strike that.
12 Tell me when you have Kantor back in front of you
13 Exhibit 1004?

14 A. Right now.

15 Q. Do you recall the ZIP file contents signature
16 or ZCS procedure in Kantor?

17 A. Would you remind me of the page?

18 Q. Take a look at page 55.

19 A. Yes, we were there before.

20 Q. In the bottom under the Z heading. Do you see
21 that?

22 A. Yes.

1 Q. So that's what your understanding is of what
2 the ZCS or ZIP file contents-signature procedure is in
3 Kantor, right?

4 MS. VREELAND: Objection to the form.

5 A. Yes.

6 Q. Is that same procedure also described on
7 page 9 of Kantor under the heading "ZIP file contents
8 signature"?

9 MS. VREELAND: Objection outside the scope.

10 (Witness reviewing)

11 A. This -- the passages you pointed out seem to
12 cite the same procedure.

13 Q. It's your understanding it's the same ZCS
14 procedure?

15 A. Yes.

16 Q. When Kantor determines a ZIP content signature
17 or ZCS, does Kantor apply any hash function to any of
18 the directories or headers of the ZIP file?

19 A. No.

20 Q. So is it fair to say that Kantor's ZCS or ZIP
21 file content signature is not based on the headers or
22 directories of a ZIP file?

1 MS. VREELAND: Objection to form.

2 A. Yes.

3 Q. And Kantor actually explains that Kantor
4 intentionally does not want ZCS to be based on things
5 like filenames, comments, compression data, time in the
6 ZIP file, right?

7 A. Yes.

8 Q. And where does Kantor explain that?

9 A. I think in both of those passages that you --
10 so certainly in the passage on page 55 in the second
11 part of the paragraph. And then the other one, it's the
12 same as -- yeah, it -- it's not the same words and they
13 don't list the same things, but it's the same idea in
14 the second half of that paragraph.

15 Q. So if Kantor determines a ZCS or ZIP contents
16 signature, Kantor intentionally does not apply any hash
17 function to filenames, compression data, comments, dates
18 in the ZIP file, right?

19 A. That's the clear expression in these two
20 passages.

21 Q. Can you explain -- let me rephrase that.

22 Does Kantor ever make any determination

1 regarding whether or not a newly-received file is a ZIP
2 file or not a ZIP file?

3 MS. VREELAND: Objection to form.

4 A. I don't know specifically, but I'm -- it seems
5 to me he must because he computed the contents-signature
6 differently.

7 Q. What's the difference between how Kantor
8 processes ZIP files versus non-ZIP files?

9 A. The ZIP file content signature for a ZIP file
10 is different from the plain old content signature for a
11 plain file.

12 Q. What's the difference?

13 A. So the a plain old file gets a content
14 signature that is the concatenation of its 32 bits CRC
15 with its 32-bit length. The ZIP file gets a contents
16 signature which is the concatenation of the sum of the
17 internal file's own 32 bits CRC modulo 2^{32} and with the
18 concatenation of that and with the sum of the
19 uncompressed lengths of the files.

20 Q. What would happen if Kantor received a ZIP
21 file that had a different extension like .rtf at the end
22 instead of .zip, how would Kantor process that?

1 A. I do not know.

2 Q. You don't know?

3 A. I do not know.

4 Q. If Kantor mistakenly determined that a ZIP
5 file was a non-ZIP file, how would that be processed?

6 A. If a file that was actually a ZIP file was
7 treated as a plain old file, then it would get a plain
8 old contents signature. And it's a CRC-32 of all of it
9 and concatenated with the length.

10 Q. In the early 1990s, are you aware of any
11 problems that arose in systems because they were unable
12 to always determine whether a received file was a ZIP
13 file or a non-ZIP file?

14 MS. VREELAND: Objection outside the scope.

15 A. I am not aware of that.

16 Q. For the ZIP contents signature or the ZCS,
17 would you agree that the ZIP contents signature or ZCS
18 is based on some but not all of the data in the ZIP
19 file?

20 MS. VREELAND: Objection to the form.

21 A. So if by the "data" we mean thinking of the
22 ZIP file as just a file, and all of the data includes

1 all of the headers and directories and everything, and
2 the Kantor ZIP file contents signature doesn't reflect
3 those things, the headers and directory.

4 Q. Do you agree that data can be considered to be
5 bits?

6 A. Certainly.

7 Q. So if data is considered bits, a ZIP file
8 includes lots of different data, such as inner files,
9 local headers, a central directory, right?

10 MS. VREELAND: Objection to the form of the
11 question.

12 A. All of those are bits. So if data is bits
13 then all that is data.

14 Q. So all of those are considered to be the
15 content of the a ZIP file. Okay? I'm asking you to
16 assume that.

17 A. Content. Okay.

18 Q. With that definition of data as being bits, do
19 you agree that Kantor's ZIP file contents signature or
20 ZCS is based on some of the data in the ZIP file but not
21 all of the data in the ZIP file?

22 MS. VREELAND: Objection to the form of the

1 question.

2 A. So the Kantor ZCS is based on all of the file
3 data in the ZIP file, but is not based on what is called
4 in the art metadata, the headers and other junk, the
5 other material in the file. If you take the view that
6 every single bit is equally qualified to be data, then
7 what you said is true then, the content signature does
8 not include the metadata.

9 Q. Are you aware that the board in these IPRs
10 interpreted data item as a sequence of bits?

11 MS. VREELAND: Objection to the form of the
12 question.

13 A. I would be happy, if I could look at that.

14 Q. I'll withdraw it.

15 Do you disagree in any respect with an
16 interpretation of "data item" as a sequence of bits as
17 used in the '096 patent?

18 MS. VREELAND: I object to the form and I
19 object on the grounds of relevance.

20 A. I would rather look at the documents that
21 involve constructions of that term.

22 Q. What document do you want to look at?

1 A. I would be pleased to see my declaration, the
2 petition, and the decision.

3 Q. Please proceed.

4 (Witness reviewing)

5 A. Okay. So I found an offered construction -- I
6 didn't look at the response. But the decision
7 summarizes the -- the parties' proposed constructions
8 for data item, and then supplies its own, which is the
9 data item means sequence of bits but that the meaning
10 includes one of the following: The contents of a file,
11 portion of a file, a page in memory, an object in an
12 object-oriented program, a digital message, a digital
13 scanned image, part of a video or audio signal, a
14 directory record, a database, a location of memory on a
15 physical device or the like, and any other entity which
16 can be represented by a sequence of bits.

17 Q. What's your understanding of the phrase
18 "sequence of bits"?

19 A. Nothing beyond the plain meaning, some bits,
20 one after the other.

21 Q. So if you had a single file line of 100 people
22 who were lining up to get into a football game, and you

1 picked all 100 people, would those 100 people represent
2 a sequence of people?

3 A. Certainly.

4 Q. What if you picked only numbers 1 through 10,
5 but then skipped 19 to 50, and you picked 52, 53, and
6 54, skipped 55 through 95, and then you picked 96
7 through 100, would that represent a sequence of people?

8 A. Well, if you -- with that understanding, if
9 you write down these, followed by these others, followed
10 by these others, then yes.

11 Q. So even though you're excluding large groups
12 and the ones you've chosen are not right after the
13 other, you still think it would be a sequence, right?

14 A. Well, your proposition suggested to me you
15 were making a new sequence; these people, followed by
16 these people, followed by these people. I'm gesturing.
17 Unhelpful.

18 Some people together, skip a few, and
19 then some more people together, skip a few, and then
20 some more people together. That's how I interpreted
21 your question.

22 Q. If you were to take those 100 people and you

1 were to -- would you say that a sequence of people is
2 made up by 1 through 10, but then skipping 11 through
3 25, and then including 26 through 50, and then skipping
4 51 through 100, would you say that would be a sequence
5 of people?

6 A. So if you write that down, then I know what
7 person comes after the 10th person. It's the 23rd
8 person.

9 Q. It's the 11th person comes after the 10th
10 person?

11 A. Well, if I want to compose my new sequence.

12 Q. I'm not asking about a new sequence.

13 MS. VREELAND: Objection. So what is the
14 pending question because I think there's no pending
15 question now?

16 BY MR. RHOA:

17 Q. You said sequence means one right after the
18 other, right?

19 A. Yes.

20 Q. Would sequence also include one not right
21 after the other where you skip large quantities in
22 between?

1 MS. VREELAND: Objection to the form.

2 A. So let's see. If the people stay in the line,
3 then you don't have a line of people, if you pick out
4 subsets. So that would not qualify as a one right after
5 the other.

6 If you take those people and stick them
7 in another line, and -- and merge the gap, erase the
8 gaps, then you would have a new sequence of people.

9 Q. So let's take the 100-person line, single file
10 line. Okay?

11 A. (No verbal response. Nods head).

12 Q. All people stay in line. Okay?

13 A. (No verbal response. Nods head).

14 Q. Okay?

15 A. Okay. Sorry. Yes.

16 Q. In that line would people 1 through 10, then
17 skipping to 51 through 65, then skipping from 66 to 90,
18 then including 92 to 100, would those selected people
19 make up a sequence of people given there are large gaps
20 between the selected people?

21 MS. VREELAND: Object to the form; also object
22 on the grounds of relevance and beyond scope.

1 BY MR. RHOA:

2 Q. Let me rephrase the question. We have a
3 single file line of 100 people, right?

4 A. Yes.

5 Q. Would people numbers 1, 2, 24, 54, 72, and 99
6 in that line make up a sequence of people?

7 MS. VREELAND: Objection to form, relevance
8 and scope.

9 A. That would be a strange use of the word
10 sequence.

11 Q. So that would not be a sequence of people,
12 right?

13 A. That would not be a sequence of people in my
14 understanding of the word sequence.

15 Q. When was the first time you saw Kantor, which
16 is Exhibit 1004?

17 A. In connection with this matter.

18 Q. So the first time you ever saw Kantor would
19 have been in 2012, sometime?

20 A. Yes.

21 Q. You did not author Kantor, right?

22 A. No.

1 MS. VREELAND: You seem to be heading to a
2 new -- a new area. And I just -- we've been going
3 over an hour. I just want to see if the witness --
4 I'm not stopping at any particular point, but I
5 wanted to see if the witness wanted to keep going.

6 I don't know what you want to do with lunch.

7 THE WITNESS: I would be happy with a break
8 relatively soon. It doesn't need to be right away.

9 BY MR. RHOA:

10 Q. One more question.

11 A. Okay.

12 Q. Do you recall seeing Kantor prior to April 11,
13 1995?

14 A. No.

15 MR. RHOA: So Cindy, do you want to do lunch
16 time now?

17 MS. VREELAND: I think whatever Dr. Clark
18 would like. Do you want to take a lunch break now
19 or you want to take a break? I think lunch is
20 ready. Whatever you want to do.

21 THE WITNESS: Ready for lunch.

22 MR. RHOA: Great. And how long would you

1 like?

2 THE WITNESS: Half an hour.

3 MS. VREELAND: Is that enough?

4 MR. RHOA: Let's go off the record.

5 (Off Record Discussion)

6 (Lunch Recess)

7 MR. RHOA: Let's go back on the record.

8 BY MR. RHOA:

9 Q. Are you familiar with Bulletin Board systems
10 that existed prior to April 11, 1995?

11 A. **Generally, yes.**

12 Q. Did you ever use any such systems prior to
13 April 11, 1995?

14 A. I don't have a specific recollection, but it
15 is likely that I did.

16 Q. Prior to April 11, 1995, how would an user
17 typically access a Bulletin Board circuitry?

18 MS. VREELAND: Objection outside the scope;
19 also object to form.

20 A. There were shared repositories before the
21 World Wide Web people -- it's so long ago, but there was
22 a time when the Internet was not in your house. And you

1 had to get onto the -- the early Internet, you needed to
2 use a dial-up connection on a modem to a computer on
3 which you had an account which you were a legitimate
4 user.

5 So a user would typically dial into one
6 of these systems and either upload or download files of
7 interest; maybe do searches.

8 Q. So a remote user would use his or her PC to
9 dial-up or log into a Bulletin Board system; is that a
10 fair statement?

11 A. Yes, or even a terminal. I've done that.

12 Q. Would that user's terminal or PC be considered
13 part of the Bulletin Board system before the login?

14 MS. VREELAND: Objection outside the scope.

15 A. I would say no.

16 Q. Why not?

17 A. It seems to me more like the client of the
18 service that the Bulletin Board system provides.

19 Q. Are you familiar with PKZIP, all capital,
20 P-K-Z-I-P?

21 MS. VREELAND: Objection outside the scope.

22 A. I am a little familiar with it.

1 Q. What is your understanding of it?

2 A. I think PK are the initials of the guy that
3 figured -- I think K is Katz maybe. Who figured out a
4 ZIP arrangement. And I think there might be a command
5 called PKZIP in Unix systems. But some of that is just
6 speculation.

7 Q. Do you have any opinion on whether PKZIP is
8 part of the Bulletin Board system described in Kantor?

9 A. I do not have an opinion on that.

10 Q. Do you have any opinion on whether the ZIP
11 files described in Kantor are formed and packaged prior
12 to reaching Kantor's system?

13 MS. VREELAND: Objection outside the scope.

14 A. I think both could happen. They could be
15 formed before being uploaded to Kantor or they can be
16 formed from individual files that were downloaded from
17 Kantor and then uploaded and then a ZIP file would.

18 Q. Does Kantor describe which of those occurs?

19 A. I do not know.

20 MS. VREELAND: Objection outside the scope.

21 BY MR. RHOA:

22 Q. Are you aware of any description in Kantor

1 describing either of those scenarios?

2 MS. VREELAND: Objection outside the scope.

3 A. I believe he speaks a lot about the uploading
4 of existing ZIP files.

5 Q. So a user would form a ZIP file, then dial up
6 to the Bulletin Board system, and upload it?

7 MS. VREELAND: Objection outside the scope.

8 A. So I think that's about right. I would -- the
9 way I would say it is you dial up, dial into a computer
10 in which you were an authorized user, and then do
11 your -- and that would -- that would run a Bulletin
12 Board system where it would have a Bulletin Board
13 client.

14 Q. You recall the ZCS or ZIP file contents
15 signature described as Kantor, right?

16 A. Yes.

17 Q. Does Kantor describe accessing a ZIP file
18 using a ZCS?

19 A. I would like to consult my documents, if
20 that's all right?

21 Q. Sure.

22 (Witness reviewing)

1 THE WITNESS: Sorry. Can I get the question
2 again?

3 (Record Read)

4 MS. VREELAND: Objection outside the scope.

5 (Witness reviewing)

6 A. So I found an instance where that does happen.
7 The Kantor system uses the ZIP file contents signature
8 to delete duplicates uploaded under different names and
9 determine whether a ZIP file being uploaded to a system
10 already exists in the system.

11 So there would be the computation of the
12 ZCS. And then using the ZCS to look up or to determine
13 whether the file was already there.

14 Q. Where's that?

15 A. The citation I found was in the petition for
16 '544. And I'm sure that's -- something like that
17 appears in the declaration.

18 Q. What page of Kantor are you referring to here?

19 A. It's not a citation of Kantor. It's a
20 citation of the petition and it references Kantor 9 and
21 the preface at 2.

22 (Witness reviewing)

1 A. So reading a Kantor 9 in the ZIP file
2 contents-signature paragraph that we were looking at
3 before, about 60 percent of the way through the
4 paragraph, "This is especially valuable when one is
5 running a large system and wishes to delete duplicate
6 zipfiles uploaded under different names."

7 Q. Is the purpose of Kantor to delete duplicate
8 files?

9 MS. VREELAND: Objection to form.

10 A. It is one of the purposes. I wouldn't say it
11 that way exactly. I would say to limit the storage of
12 duplicate files.

13 Q. To detect and avoid duplicate files; is that a
14 fair statement of Kantor's goal?

15 A. That's certainly one of his goals.

16 Q. So are you saying that accessing and deleting
17 are the same thing?

18 A. Definitely not, but in order to delete, you
19 must access.

20 Q. What's your understanding of accessing?

21 A. Produce a name -- sorry. Deliver a name to a
22 data structure to do something with the piece of data

1 that's named.

2 Q. Does Kantor describe accessing a CRC value
3 using a ZCS?

4 MS. VREELAND: Objection outside the scope;
5 also object to form.

6 A. I think so. Let me look more closely.

7 (Witness reviewing)

8 A. So this is what I was looking for and I found
9 at least a small mention. It's the GET.BAT script.

10 Q. What pages?

11 A. Mentioned on page 186. And I have a feeling
12 there's a more extensive explanation of it in another
13 spot, but this is at least the function I was looking
14 for.

15 "GET.BAT gets matching
16 contents_signatures when given either a
17 contents_signature," that's what we're interested in,
18 "or a (zip or plain) file."

19 MS. VREELAND: And I just want to make sure
20 the transcription is correct. Was it B-A-T?

21 THE WITNESS: B-A-T.

22 BY MR. RHOA:

1 Q. Does Kantor -- are you done with your answer?

2 A. I could continue to look, but I'm willing to
3 stop.

4 Q. Let me ask another question. I understand
5 you're stopping looking. Let me ask another question to
6 kind of pinpoint what I want to get at here.

7 Does Kantor describe using a ZCS to read
8 CRC values from a ZIP file?

9 MS. VREELAND: Objection outside the scope.

10 A. So the hint about the GET.BAT script, we just
11 read, suggests that that happens --

12 Q. Can you explain -- well, aren't the CRC values
13 formed prior to the ZCS being formed?

14 MS. VREELAND: Objection outside the scope.

15 A. Yes.

16 Q. So how can the ZCS be used to read CRC values
17 if it's formed after the CRC values are formed?

18 MS. VREELAND: Objection outside the scope.

19 A. So we may not be on the same page here, I
20 guess, because that makes perfect sense to me. So
21 there's a ZIP file in the database and there's a ZCS
22 that indicates it.

1 signatures.

2 That's the end of that sentence and
3 paragraph.

4 Q. Does that paragraph say that you obtain CRC
5 values from a ZIP file?

6 A. So I'll just read that phrase again. So
7 GET.BAT can be -- I'm going to ally some interior
8 words -- not ally, omit.

9 GET.BAT can be used to get to your screen
10 or into an output file. All the contents signatures on
11 the system which match the contents signature which you
12 enter or which match -- or of all the files in a ZIP
13 file including the ZIP file contents signatures.

14 Q. So where does that say you obtain a CRC value
15 from a ZIP file?

16 MS. VREELAND: Objection outside the scope.

17 A. So that's -- we could re-parse this, but I
18 think that's what it's saying.

19 Q. Where is the CRC value described in that
20 paragraph you're referring to?

21 MS. VREELAND: Objection outside the scope.

22 A. So the CRC is the contents signature of a

1 plain file. And the phrase here is "or which match the
2 contents signature of a plain file or of all the files
3 in a ZIP file.

4 Q. And you're using a ZCS which is not a plain
5 file, right?

6 MS. VREELAND: Objection outside the scope.

7 A. ZCS not a plain file, but I read this to say
8 you can use this command or script, I guess, to get out
9 of the ZIP file all the contents signatures that are in
10 it including its own.

11 Q. The contents signature for a ZIP file is a
12 ZCS, right?

13 A. Yes.

14 MS. VREELAND: Objection outside the scope.

15 BY MR. RHOA:

16 Q. Not a CRC, right?

17 A. Yes.

18 Q. So how does getting ZCS --

19 A. No.

20 Q. -- result in obtaining CRCs from a ZIP file?

21 A. So I read this --

22 MS. VREELAND: Objection outside the scope.

1 A. -- so I read this to say you get the -- you
2 get the contents signatures of all the files in a ZIP
3 file and also you get the ZIP file contents signature.

4 Q. And what does Kantor say you do with them,
5 when you get them?

6 MS. VREELAND: Objection outside the scope.

7 A. He doesn't say here what to do with that
8 particular feature.

9 Q. Does Kantor describe BBS, that's Bulletin
10 Board system, command functions?

11 A. Sorry?

12 Q. You want the question read back?

13 A. So if you had a BBS and you didn't have
14 Kantor, does he describe those functions?

15 Q. Let me rephrase the question.

16 Does Kantor describe Bulletin Board
17 system command functions?

18 A. I do not know.

19 Q. Can you turn to Exhibit EMC 1009, which is
20 your declaration in the '096 patent IPR?

21 A. Yes.

22 Q. Please refer to paragraph 83 of that

1 declaration.

2 MR. DICHIARA: I'm sorry. Can you repeat the
3 paragraph?

4 MS. VREELAND: 83.

5 BY MR. RHOA:

6 Q. Tell me when you're there?

7 A. I am there.

8 Q. In paragraph 83, you allege that it would have
9 been "obvious to modify the BBS commands, including the
10 download and/or read commands." Do you see that?

11 A. Yes.

12 Q. Are those BBS commands described in Kantor?

13 A. I do not know.

14 Q. Whose language is this? Is this your language
15 or one of the attorney's language?

16 A. That, also, I do not know.

17 Q. Prior to April 11, 1995. were filenames
18 typically used for BBS commands?

19 A. I do not know firsthand, but you said as the
20 commands or with the commands?

21 Q. Let's take those situations.

22 A. Actually, I do not know whether they could be

1 commands, but seems like they would be included in
2 commands.

3 Q. So you're saying modify the BBS commands. My
4 first question is: What were the BBS commands in Kantor
5 before they were modified?

6 A. So commands, I'm talking here about commands
7 that would download or read a file by the filename.

8 Q. And you don't know if Kantor describes any
9 such BBS commands?

10 A. That's correct.

11 Q. Prior to April 11, 1995, would conventional
12 filenames have typically been used to identify files in
13 BBS commands?

14 MS. VREELAND: Objection to form.

15 A. I do not know. That would seem reasonable,
16 but I do not know for sure.

17 Q. Does Kantor describe anything other than
18 conventional filenames for use with BBS commands?

19 A. Well, yes, in the sense that he describes
20 using quite a lot of complicated features, flags, and
21 whatnot, in his commands; not just filenames.

22 Q. Does Kantor -- back up.

1 Does Satyanarayanan --

2 A. Everyone says Satya. That's all.

3 Q. -- describe using anything in particular for
4 BBS commands?

5 MS. VREELAND: Objection to form.

6 A. I think not, but I will look.

7 (Witness reviewing)

8 A. So I've done a quick scan of this
9 Satyanarayanan reference, and I do not see a mention of
10 Bulletin Board systems.

11 Q. Does Satyanarayanan or Kantor describe any
12 problems with using conventional filenames for BBS
13 commands?

14 A. So Satyanarayanan, I think not. So Kantor, I
15 think does. That's kind of part of his rationale that
16 he might have files that are the same but have different
17 names.

18 Q. If you're not sure if Kantor describes BBS
19 commands, then how can Kantor describe a problem with
20 using a particular thing for BBS commands?

21 MS. VREELAND: Object to the form.

22 A. So the way I read it, Kantor says, here's this

1 problem with filenames. Why don't you use my contents
2 signature instead. And that would be applicable to a
3 Bulletin Board system in his file just as well as any
4 other kind of file systems would use filenames.

5 Q. Does Kantor teach or suggest that CRC values
6 alone are not sufficiently unique for preventing
7 duplicate files?

8 A. He argues that it's -- essentially, yes. Let
9 me explain that. He says, and has experimental data to
10 support the idea, that if you concatenate the length of
11 the file with the CRC, you get a much lower risk of
12 colliding. And he presents data from a whole bunch
13 of -- well, a small number of Bulletin Board systems.

14 So the CRC by itself concatenate the job
15 but not as well as the CRC concatenated with the length
16 of the file.

17 Q. Can you refer to page 5 of Kantor and tell me
18 when you're there?

19 A. I am there.

20 Q. At the bottom of page 5, it mentions
21 LOOKUP.DOC, all in capital letters. Do you see that?

22 A. Yes.

1 Q. What is that?

2 A. I assume it's not a .doc file because this was
3 before that -- oh, is that true? Yeah. I assume it's
4 not a .doc, not a Word file. It looks like it's some
5 sort of documentation file.

6 And that's where you're supposed to look
7 for the details of the command or, sorry, the important
8 remote inquiry procedure.

9 Q. Is that LOOKUP.DOC file part of Exhibit 1004?

10 A. I do not know. I think not.

11 Q. Have you ever looked at that LOOKUP.DOC file?

12 A. I don't recall doing that, assuming that that
13 that is a file and not a command or something else.

14 Q. On the line below that, it also references
15 PRECHECK.DOC." Do you see that?

16 A. Yes.

17 Q. What is that?

18 A. I think something to use -- some way to find
19 out how to use the prechecking feature in the system.

20 Q. Is PRECHECK.DOC a separate file from
21 Exhibit 1004?

22 A. I do not know. I think it is, if it is a

1 file.

2 Q. Have you ever looked at the file or document
3 identified as PRECHECK.DOC?

4 A. I do not think so.

5 Q. Please go to paragraph 83 of your declaration
6 which is Exhibit 1009.

7 THE WITNESS: It's the '096 declaration?

8 MR. RHOA: Yes.

9 A. I can find it more easily this way.
10 (Indicating) Paragraph 83?

11 Q. Yes.

12 A. Okay.

13 Q. That's the same paragraph we looked at
14 previously, right?

15 A. Yes.

16 Q. You refer to a LOOKUP feature in paragraph 83,
17 right?

18 (Witness reviewing)

19 A. Yes.

20 Q. Where in Kantor is that LOOKUP feature?

21 A. Well, I'm just going to chase these page
22 references to him.

1 (Witness reviewing)

2 A. So page 97 has a mention of, in the second
3 paragraph, has a mention of LOOKUP.BAT and LOOKUP.DOC.

4 I found something that is responsive to
5 an earlier question. May I just insert that and then
6 we'll go back?

7 Q. Sure.

8 A. So in the middle of page 96, in the paragraph
9 that begins "Option i," the middle of that paragraph
10 says "...use the Y form of the TEST function to obtain
11 full sets of contents_signatures for all of the files in
12 each of those zipfiles..."

13 So I think this page citation for LOOKUP
14 on my -- in my paragraph 83 is missing a page. It
15 should be instead of 97. It should be 96, 97.

16 Q. Where are you talking about?

17 A. The paragraph 83, page 48, line 5. There's a
18 citation to page 97 which I would rather be 96 and 97.

19 Q. Now, of course, the LOOKUP does not appear on
20 page 96, right?

21 MS. VREELAND: Objection.

22 A. Well, it at least occurs in the very last

1 line --

2 Q. Okay.

3 A. -- and I'm wondering about this strange
4 filename that has LOOKUP embedded in it.

5 Q. This LOOKUP.BAT. You see that?

6 A. Yes.

7 Q. Is that part of the LOOKUP.DOC file or is it a
8 different file?

9 MS. VREELAND: Objection to the form.

10 A. So --

11 MS. VREELAND: Objection outside the scope as
12 well.

13 A. -- I'm quite uncertain about LOOKUP.DOC, but
14 it could -- I won't speculate. I do believe the BAT
15 extension denotes a script file.

16 Q. What's a "script file"?

17 A. It's kind of like a program at the command
18 line level. Things you might type in sequence. A
19 scripting language will give you the ability to compose
20 into a script, and then you can run that kind of like a
21 program at the command line.

22 Q. So is that file part of or different than

1 LOOKUP.DOC?

2 A. Having a different extension, I would guess
3 it's not the same.

4 Q. Is the LOOKUP.BAT file contained within Kantor
5 Exhibit 1004?

6 A. I don't think so. I think there are some -- I
7 hesitate only because I've seen fragments of things in
8 these last pages.

9 (Witness reviewing)

10 A. I don't think it's here.

11 Q. Have you ever reviewed the LOOKUP.BAT file?

12 A. No.

13 MS. VREELAND: Objection outside the scope.

14 BY MR. RHOA:

15 Q. So this LOOKUP feature you're talking about in
16 paragraph 83, is that made up of the LOOKUP.BAT and
17 LOOKUP.DOC files?

18 A. So I'm looking at page 173 now, and here's
19 another citation of both of those things in the same --
20 within an inch of each other. So LOOKUP.DOC it says
21 works together with FWKCS version to let you use
22 large -- yeah, not helpful. There's more information

1 here that suggests that LOOKUP.DOC is a documentary
2 file, a documentation file.

3 Q. That's separate from Kantor, right?

4 A. It's separate from this reference. It may be
5 you can get it on-line. There is sometimes, when he
6 says, define more about this, kindly type this on-line
7 thing, and you'll get the...

8 Q. So again, is the LOOKUP feature in
9 paragraph 83, that you're referring to, you reference
10 pages 97 and 173 of Kantor, is that LOOKUP feature this
11 thing that's made up of LOOKUP.DOC and LOOKUP.BAT?

12 A. I do not know.

13 Q. Whose language was this? Was this your
14 language or one of the WilmerHale attorney's language?

15 A. I cannot say with confidence say that with
16 most of this. (Indicating)

17 Q. So then further down on paragraph 83, your
18 declaration states: "It would have been straightforward
19 to allow download and read commands to identify a file
20 by a contents-signature in a similar way." Do you see
21 that?

22 A. Yes.

1 Q. You're referring there to a similar way as the
2 LOOKUP feature, right?

3 A. Point me to the similar way. I wasn't
4 following.

5 Q. You see the LOOKUP on page 48 of your
6 declaration, five lines down, you refer to the LOOKUP
7 feature?

8 A. Yes.

9 Q. And there's a sentence in which the LOOKUP
10 feature is at the center of it. You see that?

11 A. Yes.

12 Q. Following the LOOKUP feature, there's a coma.
13 And then it says, after the coma "It would have been
14 straightforward to allow downloaded read commands to
15 identify file by a contents-signature in a similar way."

16 Do you see that?

17 A. Yes.

18 Q. You're referring to "in a similar way," to the
19 LOOKUP feature, right?

20 A. Yes.

21 Q. Well, the LOOKUP feature is not even in
22 Kantor, right? I mean those files are not in Kantor?

1 MS. VREELAND: Objection to the form of the
2 question.

3 A. The feature is described. I've been unable to
4 find the script file -- it's like the source code for
5 the feature that's described.

6 Q. How many lines in Kantor describe the LOOKUP
7 feature?

8 A. I do not know.

9 Q. On pages 97 and 173, I'm counting no more than
10 19. So my question is:

11 Based on the 19 lines in Kantor, how
12 would one know how the LOOKUP feature works?

13 (Witness reviewing)

14 A. There's a little more about LOOKUP on page 98.

15 (Witness reviewing)

16 A. I'm not getting smarter about LOOKUP.

17 Q. You didn't write this part of your
18 declaration, did you?

19 MS. VREELAND: Objection to the form of the
20 question.

21 A. I do not know which lines have me in them and
22 which don't.

1 Q. Kantor never even describes using content
2 signatures in commands for LOOKUP.DOC or LOOKUP.BAT,
3 does he?

4 MS. VREELAND: Objection to form. Objection
5 outside the scope.

6 A. I have not been able to see that in the page
7 citations that I've given.

8 Q. Is it fair to say that in order to understand
9 how this LOOKUP feature works, one would have to look up
10 the LOOKUP.DOC and/or LOOKUP.BAT file?

11 MS. VREELAND: Objection outside the scope.

12 A. It could not hurt to find those files. I mean
13 they're both files. Also, it could not hurt to look
14 more deeply in the reference itself.

15 Q. As you sit here right now, are you aware of
16 anything else in the Kantor reference that describes
17 this LOOKUP feature?

18 MS. VREELAND: Objection to form. And are you
19 asking just based on his memory?

20 A. I'm not aware of other things, as I sit here
21 right now.

22 Q. Is it possible -- let me rephrase that.

1 Do you recall testifying earlier that a
2 ZIP file includes a plurality of inner files?

3 A. Yes, although I believe you can have a ZIP
4 file with just one file, one inner file.

5 Q. I would like you to assume a ZIP file with a
6 plurality of inner files. Is that okay?

7 A. Yes.

8 Q. Is it possible for any of those inner files to
9 overlap one another in a ZIP file?

10 A. No.

11 Q. Why not?

12 A. That would be peculiar. I don't -- it doesn't
13 make any sense.

14 Q. You're not aware of any files in a ZIP file
15 ever overlapping one another?

16 A. No.

17 Q. I would like you to turn, again, to page 55 of
18 Kantor. Are you there?

19 A. Yes.

20 Q. There's another procedure called the "y,"
21 lower case y, "procedure" in the middle of page 55 of
22 Kantor. Do you see that?

1 A. Yes.

2 Q. It's under the heading "y = make cs for
3 zipfile as if plain file." Do you see that?

4 A. Yes.

5 Q. Is that procedure a different procedure than
6 the ZCS procedure?

7 MS. VREELAND: Objection outside the scope.

8 A. Let me just read the description here.

9 (Witness reviewing)

10 A. Yes, it's different.

11 Q. In the y procedure, Kantor just applies a CRC
12 to the whole ZIP file, right?

13 A. Yes.

14 Q. And that's it?

15 MS. VREELAND: Objection outside the scope.

16 (Witness reviewing)

17 A. Well, it doesn't say that it also computes
18 the -- yeah, computes the length and uses that in the
19 contents signatures, but I assume that's true since
20 we're just making a plain file contents signature.

21 Q. In the y procedure described on page 55, does
22 Kantor describe doing anything other than applying a CRC

1 value to the whole file and forming the contents
2 signature?

3 MS. VREELAND: Objection outside the scope.

4 A. He implies it by saying that y is "make CS for
5 zipfile as if plain file." So if he were doing that, he
6 would do his usual thing of concatenating the length.

7 Q. Please refer to -- let me rephrase that. On
8 page 55 for the y procedure, at the end of the y
9 procedure, it says that "p and y can be used in looking
10 for change."

11 Do you see that?

12 A. Yes.

13 Q. I would like you to refer to page 51 of
14 Kantor?

15 A. I'm there.

16 Q. Is there a p procedure described on page 51?

17 A. Yes.

18 Q. Does the p procedure do anything other than
19 apply a CRC to come up with a contents signature?

20 MS. VREELAND: Objection outside the scope.

21 (Witness reviewing)

22 A. Yes, it does because it says, "For an example

1 of the output, see last example line in '/1x Output
2 Format' below." And if you head over there, you see the
3 bit length, 32-bit length, is part of the content
4 signature.

5 Q. And where is that?

6 A. So I'm reading the place you sent me to, the
7 end of that paragraph. "For an example of the output of
8 the p, see the last example line in '/1x Output Format'
9 below."

10 And if I go there --

11 Q. Where is that?

12 A. That's on subsequent page 52, at the bottom
13 with the complicated pseudographics. And he's directing
14 us to the last line of that, which would be on the
15 following page which is page 53. So that contents
16 signature does have the length concatenated. That
17 quality does have some sort of length.

18 Q. Let's go back to page 55.

19 A. Okay. I'm back.

20 Q. Would the contents signature determine in
21 procedure y be the same as the contents signature
22 determine in procedure z for the exact same ZIP file?

1 MS. VREELAND: Objection outside the scope.

2 A. No.

3 Q. Why not?

4 A. So the Z option makes the ZIP file contents
5 signature using the -- some of the interior 32-bit CRCs,
6 whereas the y procedure calculates its own CRC using --
7 and that's one distinction.

8 The other distinction is the y procedure
9 reads the entire ZIP file and not just the -- reads --
10 no, that's...

11 No, I withdraw that. That didn't make
12 sense.

13 Q. You withdraw what?

14 A. When I started to mumble, I was going to a
15 place that doesn't make sense, so -- but I don't
16 withdraw the idea that these are two different things
17 for the same ZIP file.

18 Q. So the contents signature from the y procedure
19 would be different than the contents signature from the
20 z procedure for the exact same ZIP file, right?

21 A. Yes.

22 Q. In the z procedure, the ZCS is determined

1 using the CRCs for all the different inner files in the
2 ZIP file, right?

3 A. And their lengths.

4 Q. Right?

5 A. Yes.

6 Q. In the y procedure, that's not the case,
7 right?

8 MS. VREELAND: Objection outside the scope.

9 A. That is -- that is right.

10 Q. Does Kantor describe whether the y procedure
11 and the z procedure are used together or at the same
12 time?

13 A. I do not know.

14 MS. VREELAND: Objection outside the scope.

15 BY MR. RHOA:

16 Q. So do you know if the y procedure is used in
17 conjunction with the z procedure?

18 A. I do not know.

19 Q. Do you know whether the y procedure is used
20 instead of the z procedure?

21 MS. VREELAND: Objection outside the scope.

22 A. I doubt it would be instead because it has a

1 different function.

2 MS. VREELAND: I mean, finish Kantor or
3 whatever your points are on this topic, but we have
4 been going for about an hour and a half. So at
5 some point we should stop.

6 BY MR. RHOA:

7 Q. Is it fair to say that the z procedure treats
8 a ZIP file as including a plurality of parts and that
9 the y procedure does not?

10 MS. VREELAND: Objection to form. Objection
11 outside the scope.

12 A. I think that's generally true except for the
13 nuance about plurality. You could have a perfectly good
14 zip file that has only one inner file.

15 Q. Would a file system that could not distinguish
16 between different files having the same name be a good
17 system or bad system?

18 MS. VREELAND: Objection outside the scope;
19 objection to form as well.

20 A. I'm trying to imagine the scenario.

21 Q. Let's say there were five different files that
22 all had the exact same name. You understand?

1 BY MR. RHOA:

2 Q. Do you have Exhibit 1005 in front of you?

3 A. I do.

4 Q. What is this?

5 A. This is the Woodhill patent '196.

6 Q. So if I refer to "Woodhill," you understand
7 I'm referring to EMC 1005?

8 A. I will.

9 MR. RHOA: I would like to introduce
10 EMCVMW1009.

11 (Exhibit No. 1009 marked for identification)

12 BY MR. RHOA:

13 Q. Do you have that in front of you?

14 A. I do.

15 Q. What is Exhibit 1009?

16 A. That is my declaration in the '791 patent.

17 MR. RHOA: And I would like to introduce
18 EMCVMW1001.

19 (Exhibit No. 1001 marked for identification)

20 BY MR. RHOA:

21 Q. Do you have that in front of you?

22 A. I do.

1 Q. What is Exhibit 1001?

2 A. That is the '791 patent.

3 Q. And that's for the 00082 IPR. That Exhibit
4 number.

5 Are you familiar with the Woodhill
6 patent?

7 A. Yes.

8 Q. Did you review it in preparation for today's
9 deposition?

10 A. Yes.

11 Q. If I refer to the "'791 patent," will you
12 understand that I'm referring to Exhibit 1001 that I
13 just introduced?

14 A. Yes.

15 Q. When was the first time you saw the Woodhill
16 patent?

17 A. Almost certainly when I found it in this
18 matter.

19 Q. 2012 sometime?

20 A. Yes.

21 Q. Are you familiar with Woodhill's description
22 of a Binary Object Identifier?

1 Q. In Woodhill is a Binary Object Identifier a
2 named file?

3 MS. VREELAND: Objection to form.

4 A. "A named file," did you say?

5 Q. Yes.

6 A. No.

7 Q. Why not. Please refer to Figure 3 of
8 Woodhill?

9 A. I'm on it.

10 Q. Do you see reference number 40?

11 A. Yes.

12 Q. That says "filename," right?

13 A. Yes.

14 Q. And you also see down at the bottom reference
15 No. 74 for Binary Object Identifier, right?

16 A. Yes.

17 Q. That filename 40 is not for the Binary Object
18 Identifier. It's for something else or is it the same
19 thing? Let me rephrase that.

20 What is the filename 40 naming?

21 A. I believe --

22 MS. VREELAND: Objection.

1 A. -- I believe it is a conventional name of a
2 file.

3 Q. And that file has multiple data streams in
4 Woodhill?

5 A. It may.

6 MS. VREELAND: Objection.

7 BY MR. RHOA:

8 Q. And that file would -- withdraw that.

9 Are you familiar with the backup
10 procedure described in Woodhill that involves Binary
11 Object Identifier 74?

12 A. Yes.

13 Q. Where is that described?

14 A. I believe in most or all of Figure 5, and its
15 many parts, and then in the corresponding sections of
16 the specification.

17 Q. Is there a portion of the specification that
18 describes the backup procedure in Woodhill in detail?

19 MS. VREELAND: Objection to form.

20 BY MR. RHOA:

21 Q. For example, column 9, top half of column 9?

22 A. So I think there are quite a lot of places in

1 the specification, including that one, that describe the
2 backup procedure.

3 Q. Does column 9 accurately describe Woodhill's
4 backup procedure that uses Binary Object Identifier 74?

5 A. I don't think that's all of it. I think
6 there's more of the specification with backup.

7 Q. Does column 9 give you a general description
8 or detail description of most of Woodhill's backup
9 procedures?

10 MS. VREELAND: Objection to form.

11 BY MR. RHOA:

12 Q. If there's any place else in the spec you want
13 me to look, just feel free to point it out.

14 (Witness reviewing)

15 A. So again, I would say there's quite a lot more
16 of the specification that deals with the backup of the
17 of the patent.

18 Q. What figures do you think best illustrate the
19 backup procedure in Woodhill that uses these Binary
20 Object Identifiers?

21 MS. VREELAND: Objection to form.

22 A. So 5A, 5B, 5C, 5D, maybe not 5E, allocation.

1 Again, I'm misunderstanding your question. Is your
2 question which make algorithmic use of the Binary Object
3 Identifier?

4 Q. My question is, which figure or figures best
5 describe Woodhill's backup procedure that Woodhill uses
6 in order to backup objects using Binary Object
7 Identifiers?

8 A. So then I'm going to say quite a lot of the
9 Figure 5 pictures.

10 Q. How about Figure 5j?

11 (Witness reviewing)

12 A. So this is the audit procedure flowchart. And
13 I guess you could say that that is not itself part of
14 the backup procedure. It may be part of the backup, I
15 don't know, package or something.

16 Q. During Woodhill's backup procedure, does
17 Woodhill calculate a new Binary Object Identifier 74?

18 A. Yes.

19 Q. And is that described in column 9, lines, 10
20 to 11 as what's calculated at 138?

21 (Witness reviewing)

22 A. Yes.

1 Q. And does Woodhill compare that new Binary
2 Object Identifier 74 with anything?

3 A. So he compares the newly created -- so I'll
4 just read from the specification here. "The Binary
5 Objects that have changed are identified by comparing
6 the Binary Object Identifier 74, calculated just now,
7 with the corresponding Binary Object Identifiers
8 associated with the next most recent Backup Instance
9 Record for the file identified by the backup," et
10 cetera, et cetera.

11 Q. So Woodhill compares the new Binary Object
12 Identifier 74 with a previous Binary Object Identifier
13 74 for that file; is that right?

14 A. Yes.

15 Q. How many different previous Binary Object
16 Identifiers does Woodhill compare the new Binary Object
17 Identifier with?

18 A. Here he says one, but there are spots he says
19 more than one.

20 Q. Where?

21 A. Column 2 has one of those. I think there's
22 another.

1 (Witness reviewing)

2 A. So in column 2, line 15, we're "comparing the
3 current value of the Binary Object Identifier associated
4 with a particular binary object to one or more previous
5 values of the Binary Object Identifier associated with
6 that particular binary object."

7 And in the back of my mind I have the
8 idea that there's another such citation in the
9 specification, but I can't put my finger on it without
10 looking.

11 Q. And in those one or more previous values of
12 the Binary Object Identifier associated with that
13 particular binary object in column 2, that he's referred
14 to, those are all the same file, right?

15 A. The same file.

16 Q. Does Woodhill back up binary objects on a
17 file-specific basis?

18 MS. VREELAND: Objection to form.

19 A. Do you mean, does he back up just one file?

20 Q. Does Woodhill back up just one file at a time?

21 MS. VREELAND: Objection to form.

22 A. I think the computer that's performing the

1 steps is doing one file at a time, but then it would
2 ordinarily do another file.

3 Q. Is it fair to say that Woodhill back ups
4 binary objects on a file-by-file basis?

5 MS. VREELAND: Objection to form.

6 A. I think that is fair.

7 Q. In Woodhill, a binary object is also
8 associated with a particular file; is that right?

9 MS. VREELAND: Objection to form.

10 A. I would just say a particular version of a
11 particular file.

12 Q. During Woodhill's backup procedure, does
13 Woodhill ever compare a Binary Object Identifier 74 for
14 one file with Binary Object Identifiers for other files?

15 A. I believe not.

16 Q. So in that respect, Woodhill backs up binary
17 objects on a file-by-file basis?

18 MS. VREELAND: Objection to form.

19 A. Again, I think that's fair.

20 Q. When Woodhill is backing up a binary object
21 for a given file, can Woodhill determine if that binary
22 object is in other files in the system?

1 A. I assume you mean other files that aren't
2 other versions of this file?

3 Q. Yes, other files.

4 A. I think not.

5 Q. So when Woodhill is backing up a particular
6 binary object in a given file, Woodhill can only figure
7 out, or tries to figure out, whether that binary object
8 is in that particular file in a previous version, right?

9 MS. VREELAND: Objection to form.

10 A. Yes.

11 Q. Let's assume we have file A and file B.
12 They're different files. Each of them has a plurality
13 of binary objects. Okay?

14 A. Mm-hmm. Yes.

15 Q. Assume that the exact same binary object is
16 actually present in both file A and file B. Okay?

17 A. Yes.

18 Q. If file B had already been backed up and that
19 particular binary object was backed up with the Remote
20 Backup Server 12 in file B; you understand that?

21 A. Yes.

22 Q. So that particular binary object is already at

1 the Remote Backup Server. Okay?

2 A. Yes.

3 Q. If that same binary object was newly-created
4 for file A, during Woodhill's backup procedure, if
5 Woodhill could not match it with a previous version in
6 file A, Woodhill would transmit that same binary object
7 to the backup server for backup of file A; wouldn't it?

8 A. So my answer is --

9 MS. VREELAND: Objection to form.

10 A. My answer is going to be approximately yes,
11 but I think a binary object is relative to a file. So I
12 think you're -- you're suggesting -- you're asking
13 whether -- you're asking what you're asking.

14 But what I'm hearing is, if the data in
15 the binary object in one file is the same as the data in
16 a different binary object in another file, does anything
17 special happen? And my answer is no.

18 Q. So Woodhill can end up with the exact same
19 binary object in lots of different files in the backup
20 server?

21 MS. VREELAND: Objection to form.

22 A. Again, I think the answer is yes, except I

1 would say it's the same data. A binary object in one
2 file is not the same as a binary objection in another
3 file. It might have the same data but they're different
4 things.

5 Q. They would have the same sequence of bits?

6 A. Indeed.

7 Q. So Woodhill, when Woodhill is backing up a
8 binary object for a file A, Woodhill has no way of
9 figuring out whether that particular binary object is in
10 all the other files in the system, right?

11 MS. VREELAND: Objection to form.

12 A. I would say my understanding is that he
13 doesn't have a way of seeing if the data of that binary
14 object matches the data of some binary object not in --
15 that is in some other file.

16 Q. Woodhill cannot figure out if that sequence
17 of bits is in all the other files in the system; is that
18 a fair statement?

19 A. Yes.

20 MS. VREELAND: Objection to the form.

21 BY MR. RHOA:

22 Q. Do you have an opinion on whether there's a

1 substantial difference between being able to determine
2 if a sequence of bits for a given binary object is in
3 one file at a particular location compared to being able
4 to figure out if that sequence of bits for a binary
5 object is in all files in the system?

6 A. So how did the question start?

7 Q. Do you have an opinion on whether there's a
8 substantial difference between being able to do those
9 two things?

10 MS. VREELAND: Objection to form and objection
11 outside the scope.

12 A. I think there are some consequences. There
13 are some important differences.

14 Q. Like what?

15 A. So if the scenario is that two files have a
16 common binary object-sized piece of data, and, yet, they
17 reside in their own separate backup copies, you're
18 contrasting that scenario with, I guess, the scenario
19 where the -- where the two files, the two identical
20 datas, might be represented by only one binary object.

21 Q. Keep going.

22 A. Is that the other scenario?

1 Q. I'll reread the question.

2 Do you have an opinion on whether there's
3 a substantial difference between being able to determine
4 if the sequence of bits for a given binary object is in
5 one file at a particular location compared to being able
6 to figure out if that sequence of bits for the binary
7 object is in all files of the system?

8 MS. VREELAND: Objection to form. Objection
9 outside the scope.

10 A. Certainly different. I don't know about
11 significant.

12 Q. Are there any advantages associated with one
13 versus the other that you would have any opinions on?

14 MS. VREELAND: Objection scope.

15 A. Well, one problem keeping just one copy for
16 two different files is that if anybody wants to write
17 that copy in one of the files, it would seem like it
18 would end up writing that copy in both files which may
19 not be what the owner of the second file would like.

20 Q. So you wouldn't want to do that?

21 A. So that can be dealt with, but you have to
22 deal with it or else your files get messed up.

1 Q. Anything else?

2 A. That's the main thing I can think of right
3 now.

4 Q. Let's assume you have a server and there are a
5 thousand files stored at that server. Okay?

6 A. Yes.

7 Q. And you only have the capability of figuring
8 out if a given binary object is in one of those thousand
9 files. Okay?

10 A. Okay.

11 Q. And you do not have the capability of figuring
12 out if that binary object is in the other 999 of those
13 files. Okay?

14 A. Okay.

15 Q. In that scenario, is it possible to determine
16 whether -- let me rephrase that.

17 In that scenario, is it possible to
18 determine that that binary object is not present at that
19 server?

20 MS. VREELAND: Objection to form; objection
21 outside the scope.

22 A. So I did lose track of the hypothetical. Is

1 that the one where -- Could I just hear the question
2 again?

3 Q. I'll read it.

4 Assume you have a thousand files stored
5 at a server.

6 A. With you so far.

7 Q. You have the ability to figure out whether a
8 binary object is in only one of those files. And you do
9 not have the ability to figure out if that binary object
10 is in the other 999 of those files.

11 Given that situation, is it possible to
12 conclusively determine that the binary object is not
13 stored at that server?

14 MS. VREELAND: Objection to form; objection
15 outside the scope.

16 A. So I'm -- I'm going to -- I'm going to give
17 you a frustrating answer, I fear. The binary object can
18 only be in one file. There might be identical data in
19 another file. And Woodhill doesn't show us how to find
20 those.

21 But you can tell whether that particular
22 binary object, which is a piece of a particular file is,

1 or is not at the -- at the backup server.

2 Q. Assume you have a given sequence of bits, and
3 you have a thousand files stored in a server, and you
4 only have the capability of figuring out if that
5 sequence of bits is in only one of those files, and you
6 do not have the capability of figuring out if that
7 sequence of bits is in the other 999 of those files.

8 Do you understand?

9 A. Yes.

10 Q. In that situation, is it possible to figure
11 out or to determine that that sequence of bits is not
12 stored at that server?

13 A. No.

14 MS. VREELAND: I'm sorry. I didn't get my --
15 had I been faster, it would have been the same
16 objection as to the similar question, outside the
17 scope and objection to form as well.

18 THE WITNESS: Pardon me for blurting.

19 BY MR. RHOA:

20 Q. Why would it not be possible?

21 A. I think the hypothetical makes it impossible.
22 You said assume you can't look at the other files. So

1 you can't look at the other files. So you can't see
2 what thing is there.

3 That sequence of bits is in one of the
4 files or in none of the other files.

5 Q. That's a matter of common sense. You can't
6 figure out that something is conclusively not at a
7 server if you cannot examine most of the files at that
8 server; is that right?

9 MS. VREELAND: Objection to form; objection
10 outside the scope.

11 A. Generally, I agree with that.

12 Q. Can you turn to column 4 of Woodhill?

13 A. I am there.

14 Q. Column 4 lines 14 and 15 Woodhill states: "A
15 file as a collection of data streams." Do you see that?

16 A. Yes.

17 Q. Do you agree that program 24 in Woodhill views
18 a file as a collection of data streams?

19 A. That is what this sentence says.

20 Q. And you have no reason to disagree with that,
21 right?

22 A. Right because collection could be one data

1 stream.

2 Q. But it doesn't say that, does it? It says
3 "collection of data streams" in the plural, right?

4 A. Yes.

5 Q. So again, do you have any reason to disagree
6 with Woodhill's definition of a file as viewed by
7 program 24?

8 MS. VREELAND: Objection to form.

9 A. I would rather read other things he said about
10 the streams, but I do have the idea that was not
11 required. It was a feature of some files.

12 Q. So you think this part of Woodhill is wrong?

13 MS. VREELAND: Objection to form.

14 A. I think it's maybe incomplete.

15 Q. Would you like to modify that, if you could?

16 MS. VREELAND: Objection to form.

17 A. So in the sentence, a few sentences forward.

18 "For example, a file may contain its normal data and may
19 also contain extended attribute data." And those would
20 be both streams -- those would be two streams, I guess.
21 But maybe it doesn't contain extended attribute data.

22 Q. Does Woodhill describe a hash in column 8?

1 (Witness reviewing)

2 A. Yes.

3 Q. What line number in column 8 does Woodhill
4 describe a hash?

5 A. So the binary object CRC32 field is in lines 5
6 and 6. That's a hash. The binary object LRC field 68
7 is described in line 10 and a half, and that's a hash.
8 And the binary object hash field 70 is described at
9 line 22, and that's a hash. Three hashes.

10 Q. Does Woodhill describe any cryptographic
11 hashes?

12 A. I do not believe so.

13 Q. So none of the hashes in Woodhill are
14 cryptographic?

15 A. That is my understanding.

16 Q. Would you consider Binary Object Identifier 74
17 in Woodhill to be a hash?

18 A. You could call it that. Really, I think of it
19 more as three hashes than the size. But it's still
20 using the general -- the general idea of a hash. You
21 could fairly call the collection a single hash.

22 Q. In Woodhill at column 8, line 26, it mentions

1 an "initialized value." Do you see that?

2 A. Yes.

3 Q. What is that?

4 (Witness reviewing)

5 A. So that is an algorithm for producing the
6 thing -- the hash that they call a hash. And it -- it
7 iterates and changes the value of the variable called
8 hash. In each iteration of the loop for each word of
9 the binary object, we do a rotation of the current hash
10 value by 5 bits. We add one to it. And we add to it,
11 the current word.

12 So we're building a hash of the binary
13 object. And the initialized value would just be some
14 value to start with, some agreed constant. That would
15 be, just be, the parameter of this algorithm.

16 Q. Does Woodhill say what that value is?

17 A. No -- wait. I'm sorry. I don't know but I
18 doubt it.

19 Q. Do you have any opinion on what that value is?

20 A. No. I don't think it's very important.

21 Q. Could it be anything or --

22 A. Well, it would have to be the same thing

1 always, but I think it could be almost anything.

2 Q. What if you just took an integer like 5 would
3 that work?

4 A. I think. But again, everybody would have to
5 start with 5 or else the matching -- the hash wouldn't
6 match if you didn't start with the same initial value.

7 Q. Can you turn to the '791 patent?

8 A. Yes.

9 Q. Please turn to column 12, line 60.

10 A. I am there.

11 Q. Beginning at that point, you see where the
12 '791 patent describes five properties for True Name?

13 MS. VREELAND: Objection to form.

14 A. Yes, I see that.

15 Q. Do you have an understanding of those five
16 properties?

17 A. Yes.

18 Q. In property No. 3, at the top of column 13,
19 what's your understanding of what the word "randomly"
20 means?

21 (Witness reviewing)

22 A. So you have N possible hashes or True Names.

1 And it's the cardinality of the set of True Names,
2 usually big. And the property is that it would -- it's
3 desirable that hashes be evenly spread over the range of
4 possibilities, not all clumped at one end or other.

5 Q. Would a CRC alone satisfy that?

6 A. I think a CRC does that, does have that
7 property.

8 Q. How about the --

9 A. I mean, so there's some higher math involved
10 here too. "Randomly" is a term of art. But using
11 the -- the ordinary technical understanding of randomly
12 to mean evenly dispersed, it's my feeling that the CRC
13 2^{32} algorithm does produce things that are evenly
14 disbursed.

15 Q. So how about this hash field 70 line, would
16 that satisfy that?

17 A. The one we were just looking, the algorithm
18 of?

19 Q. Right.

20 A. I would have to study that.

21 Q. You don't have an opinion right now?

22 A. I don't.

1 MS. VREELAND: Objection; objection outside
2 the scope.

3 BY MR. RHOA:

4 Q. Do you have an understanding of how a True
5 Name should be calculated in view of the specification
6 of the '791 patent?

7 MS. VREELAND: Objection to the form;
8 objection, scope.

9 A. So the specification leaves us -- presents the
10 properties and leaves us some -- some options that fit,
11 so yes.

12 Q. Is that set forth at column 12, line 60
13 through column 13, line 9?

14 MS. VREELAND: Objection to form, scope and
15 relevance.

16 A. So these are the properties of the True Name
17 in the context of this patent. (Indicating)

18 Q. At column 12, line 61, the specification says
19 that a function must have those five properties, right?

20 A. Yes.

21 Q. Is that consistent with your understanding?

22 MS. VREELAND: Objection to form; objection to

1 scope; objection to relevance.

2 (Witness reviewing)

3 A. Are you waiting for me?

4 Q. I thought I was.

5 A. Oh, dear. I'm sorry. I lost track. What
6 were you asking?

7 MR. RHOA: Can you read him back the last
8 sequence, please? I'm sorry.

9 (Record Read)

10 MS. VREELAND: Objection to form, scope and
11 relevance.

12 A. So I'm only -- just, it says what it says.
13 The function MD must have the following properties. I
14 believe MD must have the following properties.

15 Q. Is there a difference between accessing a file
16 and identifying a file?

17 A. In any particular context, just my
18 understanding of those words in my field?

19 Q. Just your understanding of those words in your
20 field.

21 A. So I would say that identifying sounds more
22 like naming, pointing out a file; and accessing means

1 MS. VREELAND: Objection to the form and also
2 objection to scope.

3 (Witness reviewing)

4 A. So I discuss this in my declaration in
5 paragraphs 85 and 86. And, in particular, the
6 Distributed Storage Manager program which determines for
7 each binary object to be processed, whether the binary
8 object has changed from the version of the binary object
9 that was previously backed up. And I say that a person
10 of ordinary skill would understand that by doing this
11 check, the Distributed Storage Manager is determining
12 whether each binary object being processed is present in
13 the system or, for that matter, whether it is present
14 solely on the local computer or whether it is present at
15 the local and remote.

16 Q. What page of your declaration are you reading
17 from?

18 A. 48.

19 Q. Paragraph or page?

20 A. Page 48.

21 Q. What, in Woodhill, do you contend corresponds
22 to the "particular location" in claims 2 and 3 of the

1 '791 patent?

2 (Witness reviewing)

3 A. So I'll do claim 2, first. I talk about this
4 in the declaration, paragraphs 88 and 89, pages 50 and
5 51. And at the bottom of 50 -- this is Distributed
6 Storage Manager program again. "For each binary object
7 to be processed, this function determines whether the
8 binary object has changed from the version of the binary
9 object that was previously backed up."

10 Q. That's program 24, right?

11 A. That's...

12 (Witness reviewing)

13 A. Distributed Storage Manager program 24, it is.

14 Q. And that's the program that backs up binary
15 objects in Woodhill?

16 A. Yes.

17 Q. So my question is: What location in Woodhill
18 do you say corresponds to the "particular location" in
19 claims 2 and 3 of the '791 patent?

20 A. So I was getting there. So at the end of
21 paragraph 89, I say a person of skill would understand
22 that by comparing the Binary Object Identifier

1 calculated in the current with the one stored in the
2 file database from the next most recent, the Distributed
3 Storage Manager program is determining the existence at
4 the remote backup file server of the particular binary
5 object being processed.

6 So I'm saying the remote backup server,
7 backup file server, corresponds to that location.

8 Q. So you're saying the remote --

9 A. Location.

10 Q. -- remote backup server 12 in Woodhill
11 corresponds to "particular location" in claims 2 and 3
12 of '791?

13 A. No, I'm -- I only got to claim 2. And this is
14 an example of that functionality. And there might be
15 more, but this is an example.

16 So do you want me to do claim 3?

17 Q. Yes, please.

18 A. It is, in fact, what you said. It's the
19 remote site; similar line of analysis in my
20 paragraphs 90 and 91, pages 51 and 52, where, at the
21 end, a person of skill would understand that by doing
22 so, doing this comparison of the binary object

1 identifiers, the Distributed Storage Manager program is
2 determining the existence at a particular location;
3 namely, at the remote backup file server of the
4 particular binary object being processed by examining
5 Binary Object Identifiers stored in the file database.

6 Q. So that's backup server 12 in Woodhill, you're
7 talking about?

8 (Witness reviewing)

9 A. Yes.

10 Q. You allege that Woodhill anticipates claim 30,
11 right?

12 A. Yes.

13 Q. This is with respect to the '791 patent,
14 right?

15 A. Yes. 30?

16 (Witness reviewing)

17 A. Yes.

18 Q. What, in Woodhill, do you allege corresponds
19 to "accessing a data item in the system using the
20 identifier of the data item" in claim 30 of the '791
21 patent?

22 (Witness reviewing)

1 from the remote backup file server." The operation of
2 this function is illustrated in the figure and by
3 elements of the figure, "a person of skill would
4 understand that by restoring a binary object identified
5 by its Binary Object Identification Record, the
6 Distributed Storage Manager program accesses a
7 particular binary object using the Binary Object
8 Identifier of that binary object."

9 Q. You just read from paragraph 95 of your
10 declaration?

11 A. Yes.

12 Q. So you're saying that the identifier is the
13 Binary Object Identifier 74, right?

14 A. The identifier, is that --

15 Q. You're saying that in the self-auditing
16 procedure of Woodhill, the Binary Object Identifier 74
17 corresponds to the identifier in claims 30, right?

18 (Witness reviewing)

19 A. Yes.

20 Q. Where in the auditing procedure of Woodhill,
21 does Woodhill describe using the Binary Object
22 Identifier 74 to carry out accessing a binary object?

1 (Witness reviewing)

2 A. That would be in step 502 of Figure 5j and
3 specification in 8 -- column 18, starting around
4 line 16. "The Distributed Storage Manager program 24
5 initiates a restore or randomly selected binary object
6 identified by a Binary Object Identifier Identification
7 Record stored in file database. Program control
8 continues with step 502 where the selected object is
9 restored from either a compressed storage file residing
10 on one of the disk drives or one of the local computers
11 or from the remote backup file server."

12 Q. Is that it?

13 A. Yes.

14 Q. I noticed you didn't mention Binary Object
15 Identifier 74 in anything you just pointed to or read;
16 is that right?

17 MS. VREELAND: Objection to form.

18 A. It is a part of the identification record.

19 Q. So you're saying the Binary Object
20 Identification Record, which is referred to at Woodhill
21 column 18, line 19, includes, as part of it, a Binary
22 Object Identifier 74? Is that what you're getting at?

1 A. Yes, and that's shown in Figure 3.

2 Q. Does Figure 3 show the entire Binary Object
3 Identification Record 58 is made up of the Binary Object
4 Identifier 74?

5 A. Do you mean if that's all there is, then no.
6 Some other things too.

7 Q. What else?

8 A. The fields are linked to Backup Instance
9 Record, Binary Object Stream Type, and then there are
10 Binary Object Identifier, and then the Binary Object
11 Offset.

12 Q. So in addition to the Binary Object Identifier
13 74, the record 58 also includes Binary Object Offset 72,
14 Binary Object Stream Type 62, and link to Backup
15 Instance Record 60, right?

16 A. Yes.

17 Q. Which portion of the record 58 is employed to
18 access the binary object in the auditing procedure in
19 Woodhill?

20 A. So he doesn't tell us about that.

21 Q. Does that matter?

22 A. So I can only speculate.

1 Q. So Woodhill doesn't say which portion of the
2 record 58 is used?

3 A. He does not.

4 Q. Do you think that's important point?

5 MS. VREELAND: Objection to form.

6 A. I don't know how to answer.

7 Q. Do you have an opinion as to whether link to
8 Backup Instance Record 60 in record 58 is employed in
9 accessing the binary objects in the auditing procedure?

10 A. I do not have an opinion.

11 Q. Do you have an opinion -- well, let me
12 withdraw that.

13 Do you have Figure 3 of Woodhill in front
14 of you?

15 A. Yes.

16 Q. Do you see Field 44 in Figure 3 which is Link
17 to File Identification Record 44?

18 A. Yes.

19 Q. Do you see that?

20 A. Yes.

21 Q. Do you have an opinion on whether Field 44,
22 namely, the link to File Identification Record, is

1 employed in Woodhill's auditing procedure --

2 MS. VREELAND: Objection outside the scope.

3 BY MR. RHOA:

4 Q. -- in accessing the binary object?

5 (Witness reviewing)

6 A. I do have an opinion.

7 Q. What is your opinion?

8 A. That the Link to File Identification Record,
9 since it is not mentioned in the text about auditing and
10 reporting in column 18 nor in the flowchart of Figure
11 5j, is not involved in accessing the binary object.

12 Q. So it's not involved in accessing because that
13 name and number doesn't show up in column 18, lines 10
14 through 39; is that right?

15 MS. VREELAND: Objection to form.

16 A. Nor does it -- oh, I'm about to say something
17 that maybe I shouldn't. I was going to say that I
18 didn't see the Backup Instance Record mentioned either,
19 and I just want to make sure that's true.

20 (Witness reviewing)

21 A. Yes, because neither it nor the parent data
22 structure, the Backup Instance Record is mentioned, I

1 would say he's not describing using that for accessing.

2 Q. So that's necessarily the case, right? You're
3 100 percent certain that 44 would not be used in
4 accessing, right, because its name doesn't show up in
5 that paragraph?

6 MS. VREELAND: Objection. Objection outside
7 the scope.

8 A. I'm only saying he doesn't show the use of
9 that in his flowchart nor in his description, pros
10 description. So my inference is that he does not use
11 that.

12 Q. Are you certain of that or is that just an
13 opinion?

14 MS. VREELAND: Objection outside the scope.

15 A. It is my opinion.

16 Q. Do you have an opinion on whether Filename 40
17 in File Location 38 in the File Identification Record
18 are employed in accessing the binary object in
19 Woodhill's auditing procedure?

20 MS. VREELAND: Objection outside the scope.

21 (Witness reviewing)

22 A. I do have an opinion .

1 Q. And what's that opinion?

2 A. And that's the same as before. Because the --
3 the filename and the other -- the other thing you
4 mentioned, neither they nor their enclosing data
5 structure, the File Identification Record appear in
6 either the flowchart or the pros description in
7 column 18, those do not play a role in accessing.

8 Q. Okay. So how about if you explain then, how
9 the binary object is accessed in Woodhill's auditing
10 procedure without using the filename, without using the
11 file location, without using the length of File
12 Identification Record? How is that possible?

13 MS. VREELAND: Objection to the form;
14 objection outside the scope.

15 A. I'm not able to do that right now.

16 Q. Well, if you can't do that, then what is your
17 opinion that those fields are not used based on?

18 MS. VREELAND: Objection to form; objection
19 outside the scope.

20 A. I'll repeat that had they been part of the
21 process, I would have thought they would have been
22 mentioned in the flowchart and in -- or at least and/or

1 in the pros description. So I'm just drawing an
2 inference.

3 Q. Do you know how the binary object is accessed
4 in Woodhill's auditing procedure without using the Link
5 to File Identification Record 44, Filename, 40, File
6 location 38?

7 MS. VREELAND: Objection to form; objection
8 outside the scope.

9 A. I do not know.

10 Q. Do you know how the binary object is accessed
11 in Woodhill's auditing procedure?

12 (Witness reviewing)

13 A. I do not.

14 Q. If you took Woodhill's Binary Object
15 Identification Record 58 and you removed the Binary
16 Object Identification -- I'm sorry. Let me start over.
17 I'm sorry. I'm getting tired. New question.

18 If you took Woodhill's Binary Object
19 Identification Record 58 and you removed the Binary
20 Object Identifier 74 portion from it, leaving only
21 fields 72, 62, and 60, do you have an understanding of
22 that?

1 A. So it is the passage in Woodhill. Well,
2 there's a number of citations. Claim chart 2. This is
3 in connection with the related element in claim 1.

4 So at Woodhill column 9, lines 5 to 23.

5 (Witness reviewing)

6 A. So at line 9, Those binary objects that have
7 changed are identified by comparing the Binary Object
8 Identifiers calculated in step 138 with the
9 corresponding Binary Object Identifiers associated with
10 the next most recent Backup Instance Record 42 for the
11 file identified by the Backup Queue Record currently
12 being processed. The Binary Object Identifier
13 calculated in step 138 are compared against their
14 counterparts in the File Database 25. That identifies
15 the first binary object in the file as determined by
16 the --

17 I will stop reading, but that's the spot
18 that's identified in the claim chart.

19 Q. What column in Woodhill did you just read
20 from?

21 A. I was at column 9, line 9, and I petered out
22 around line 20.

1 Q. So you're relying on Woodhill's Backup
2 procedure to allegedly anticipate claim 41?

3 A. Yes.

4 Q. So why are you relying on the auditing
5 procedure for claim 30, and then switching to the backup
6 procedure for claim 41 that depends on claim 30?

7 A. I do not know the answer. I don't see a
8 problem.

9 Q. You don't see a problem between switching from
10 one embodiment to another embodiment?

11 A. 41 is disclosing -- is about different things
12 than 30.

13 Q. What, in Woodhill, do you contend is the
14 "current location" in claim 41 of the '791 patent?

15 (Witness reviewing)

16 A. The current location would be one of the local
17 machines in Figure -- Figure 1, the user workstation or
18 the local computer.

19 Q. So where is that described in column 9 of
20 Woodhill that you just referred to?

21 MS. VREELAND: Objection to the form of the
22 question.

1 (Witness reviewing)

2 A. So it's described, not in the passage that I
3 read, but in the -- in the passage about -- in Figure 5A
4 which discusses -- begins at discussion of this
5 flowchart.

6 BY MR. RHOA:

7 Q. What, in Woodhill, do you contend corresponds
8 to the remote location in claim 41 of the '791 patent?

9 A. The backup, the remote backup location.

10 Q. So you contend the remote location is backup
11 server 12 in Woodhill?

12 MS. VREELAND: Objection outside the scope.

13 A. Yes.

14 Q. And you rely on Woodhill's backup procedure to
15 meet claim 41, right?

16 A. Yes.

17 Q. Where in Woodhill's backup procedure is a data
18 item fetched from the remote backup server to a local
19 workstation?

20 (Witness reviewing)

21 A. It's in Figure 5I, updating a binary object in
22 a local machine and getting just the right granules from

1 the remote.

2 MS. VREELAND: When you're at another stopping
3 point, we should probably take a break.

4 BY MR. RHOA:

5 Q. So in claim 41, the first two lines say "said
6 accessing further comprises." Do you see that?

7 A. Yes.

8 Q. Do you have any understanding of what
9 accessing that's referring to?

10 A. I assume that's this accessing of claim 30.

11 Q. In claim 30, you allege that the accessing in
12 claim 30 is the auditing, right, the auditing procedure
13 in Woodhill?

14 A. Occurs during the auditing.

15 Q. And then you switch over and you say that the
16 accessing in claim 41 occurs during the backup
17 procedure; is that right?

18 A. Yeah, but I -- I would like to withdraw that.
19 I don't think that's right, I mean, just now, looking at
20 a different flow chart and different part of the
21 specification.

22 Q. What don't you think is right?

1 **A.** That the backup procedure satisfies that.

2 **Q.** Why not?

3 **A.** Seems to go in the wrong direction.

4 **Q.** Isn't it true that the destination location of
5 a binary object is reversed between the auditing
6 embodiment and the backup embodiment in Woodhill?

7 MS. VREELAND: Objection to form; objection
8 outside the scope.

9 **A.** So the auditing has the same direction as
10 restoring which is the opposite direction from backing
11 up.

12 **Q.** Isn't it true that the binary object is being
13 sent in opposite directions in the auditing embodiment
14 compared to the backup embodiment?

15 MS. VREELAND: Objection scope.

16 **A.** **Yes.**

17 MR. RHOA: You want to take a break now? Your
18 counsel wanted to take a break. Does that sound
19 good to you?

20 THE WITNESS: Sure does.

21 MR. RHOA: Okay.

22 (Short Recess)

1 BY MR. RHOA:

2 Q. What, in Woodhill, do you contend corresponds
3 to the destination location in claim 33 of the '791
4 patent?

5 (Witness reviewing)

6 A. Backup file server.

7 Q. What, in Woodhill, do you contend corresponds
8 to the source location in claim 33 of the '791 patent?

9 A. Local computers.

10 Q. Do they have a reference numeral in Woodhill?

11 A. I'm going to say the figure with all the
12 gadgets, local computers 20.

13 Q. Anything else?

14 A. No.

15 MR. RHOA: I'd like to introduce Exhibit -- it
16 has two exhibit numbers on it. One is EMC 1003;
17 the other one is EMCVMW1003.

18 (Exhibit No. 1003 marked for identification)

19 BY MR. RHOA:

20 Q. Do you have Exhibit 1003 in front of you?

21 A. Yes.

22 Q. What is this document?

1 A. This is the Langer reference, L-A-N-G-E-R.

2 Q. When was the first time you saw the Langer
3 reference?

4 A. It would have been in this matter last year.

5 Q. 2012?

6 A. Yes.

7 Q. Did you author the Langer reference?

8 A. I don't think I did.

9 Q. You're sure you didn't?

10 A. I'm sorry. I heard you say "offer," but you
11 said "author."

12 Q. Author, A-U-T-H-O-R. Let me rephrase the
13 question --

14 A. I didn't write it.

15 Q. -- did you author the Langer reference?

16 A. No.

17 Q. Is there any description in Langer of applying
18 an MD5 hash function to local headers or directories of
19 a ZIP file?

20 MS. VREELAND: Objection to form.

21 (Witness reviewing)

22 A. No, there is not.

1 MR. RHOA: No more questions at this time.

2 We reserve the right to recross. We also
3 reserve the right to depose the witness again
4 should the NetApp IPR be instituted or if any
5 testimony should change or if any other need to do
6 so arises.

7 MS. VREELAND: We are going to have some
8 questions. I think we agree they would be in the
9 morning because I'll probably go for about an hour.

10 I did just want to clarify on the record, the
11 parties' respective positions on whether a party is
12 entitled to consult with an expert that is retained
13 after the cross but before the redirect. You know,
14 our position is that the rule applies. That the
15 rule seems pretty clear that that the bar on
16 communication is just until the end of the cross.

17 I know you've interpreted it means that a
18 party cannot confer with a retained expert until
19 both the cross and redirect are complete. We
20 would, to minimize the disagreement, we would be
21 willing to live with your interpretation of the
22 rule, although we disagree with it, as long as you

1 would agree that should you provide an expert
2 declaration, and should we depose your expert, that
3 you would abide by your interpretation of the
4 rules, so that you would not consult with your
5 expert after his or her cross but before his or her
6 direct.

7 You know, in other words, we're willing to
8 live with your interpretation of the rule as long
9 as both sides play by the same rules.

10 MR. RHOA: That's agreeable. Let me just
11 reiterate. You made a few, I think, typos in your
12 comments.

13 MS. VREELAND: Okay. But along that.

14 MR. RHOA: So we are agreed -- we are agreeing
15 that we will not speak to expert witnesses or any
16 other witnesses until the entire deposition is
17 over. When I say "speak," we will not speak to our
18 witnesses concerning possible testimony, past
19 testimony, potential future questions, et cetera,
20 until the entire deposition is over.

21 MS. VREELAND: Right. Nothing of substance on
22 a case until the entire deposition is over. We

1 would abide by that interpretation with Dr. Clark.

2 You would also agree abide by that
3 interpretation with your expert.

4 MR. RHOA: So agreed. And that applies
5 tonight, right?

6 MS. VREELAND: Yes. We will not consult with
7 Dr. Clark.

8 MR. RHOA: And we agree likewise.

9 MS. VREELAND: Okay. Great.

10 MR. RHOA: So we'll continue tomorrow morning,
11 9 o'clock?

12 MS. VREELAND: 9 o'clock. Great.

13 MR. RHOA: Off the record.

14 (Deposition adjourned at 4:30 p.m.)

15

16



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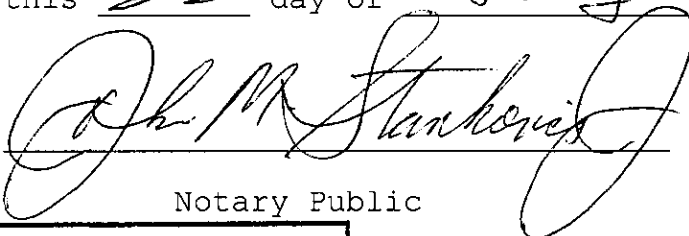
SIGNATURE OF WITNESS

18 Subscribed and sworn to and before me

19 this 23 day of JULY, 2013.

20

21



22

Notary Public

NOTARIAL SEAL
JOHN M. STANKOVICS, JR., Notary Public
City of Philadelphia, Phila. County
My Commission Expires April 7, 2015

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1 C E R T I F I C A T E

2 COMMONWEALTH OF MASSACHUSETTS

3 COUNTY OF PLYMOUTH

4 I, Rosemary F. Grogan, a Registered
5 Professional Reporter and Notary Public duly
6 commissioned and qualified in and for the Commonwealth
7 of Massachusetts, do hereby certify:

8 That DOUGLAS W. CLARK, PH.D., the witness
9 whose deposition is hereinbefore set forth, was duly
10 identified and sworn by me, at the office of Wilmer
11 Cutler Pickering Hale And Dorr LLP, 60 State Street,
12 Boston, Massachusetts, on July 10, 2013, between the
13 hours of 9:05 a.m. and 4:30 p.m., and that the foregoing
14 transcript is a true record of the testimony given by
15 such witness to the best of my ability.

16 I further certify that this was the
17 Cross-Examination deposition of Douglas W. Clark, Ph.D.,
18 taken on behalf of Patent Owner, and that counsel for
19 EMC/VMware were present.

20 I further certify that I am not related to any
21 of the parties in this matter by blood or marriage, and
22 that I am in no way interested in the outcome of this
matter.

IN WITNESS WHEREOF, I have hereunto set my
hand and affixed my notarial seal this 13th day of July,
2013.

16

17

18

19

20

21

22



Rosemary F. Grogan, RPR

CSR No. 112993

My Commission Expires: December 15, 2017

BEFORE THE PATENT TRIAL AND APPEAL BOARD IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

TRIAL NOS.: IPR 2013-00082 through 2013-00087

PATENT NOS.: 5,978,791; 6,415,280; 7,945,544;
7,945,539; 7,949,662; 8,001,096

PATENT OWNERS: PERSONALWEB TECHNOLOGIES, LLC
& LEVEL 3 COMMUNICATIONS

PETITIONER: EMC CORPORATION & VMWARE, INC.

INVENTOR: DAVID A. FARBER and RONALD D. LACHMAN

CONTINUED DEPOSITION OF
DOUGLAS W. CLARK, PH.D.

July 11, 2013

9:05 a.m.

Wilmer Cutler Pickering Hale And Dorr LLP

60 State Street

Boston, Massachusetts

Reporter: Rosemary F. Grogan, RPR, CSR No. 112993

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INDEX TO EXHIBITS

NONE

1 DOUGLAS W. CLARK, PH.D., having been
2 previously identified by the production of a driver's
3 license, and having been reminded he's still under oath
4 by the Notary Public, was examined and testified as
5 follows:

6

7 REDIRECT EXAMINATION

8 BY MS. VREELAND:

9 Q. Dr. Clark, I just wanted to begin by
10 confirming, consistent with the agreement between the
11 parties in this case, that you and I and the other
12 WilmerHale lawyers, we have not had any substantive
13 discussions about the technical issues in this case
14 between yesterday's deposition and today, correct?

15 A. That's correct.

16 Q. Now, Mr. Rhoa asked you some questions about
17 the preparation of your declarations. And you testified
18 that EMC and VMware's counsel prepared the first and
19 initial draft of the declaration.

20 Do you recall that testimony?

21 A. Yes.

22 Q. Did you review the patents and the prior art

1 before or after you received the initial drafts of the
2 declarations?

3 A. Before.

4 Q. And did you have any conversations with EMC's
5 and VMware's counsel about the substance of your
6 opinions before they prepared the draft of the
7 declarations?

8 A. Yes.

9 Q. Do you consider the opinions in the
10 declarations and these IPRs your opinions or the
11 lawyers' opinions?

12 A. My own opinions.

13 Q. Is every word in the declaration yours?

14 A. No.

15 Q. Is every opinion in the declaration yours?

16 A. Yes.

17 Q. Would you sign a declaration if you didn't
18 believe it accurately reflected your opinions?

19 A. No.

20 Q. So what steps did you take then, to make sure
21 those initial draft declarations accurately -- were
22 advised to accurately reflect your opinions?

1 A. Let's see. So a long process of revising the
2 phone calls, email, and some typing into the doc file
3 version of the documents.

4 Q. Now, Mr. Rhoa also asked you about the Kantor
5 reference and about the ZIP files in that reference.

6 Do you recall discussing the ZIP files
7 with Mr. Rhoa?

8 A. Yes.

9 Q. Now, you testified that the ZIP files include
10 a directory, one or more inner files, and headers for
11 the inner files. Do you recall that testimony?

12 A. Yes.

13 Q. Are the inner files in the ZIP file data or
14 metadata?

15 A. The inner files? So each inner file has a
16 header. So there's the data of the inner file and
17 there's the header.

18 Q. And is the header in the inner file data or
19 metadata?

20 A. That is metadata.

21 Q. Okay. You also mentioned some other items
22 that are in these ZIP files including the directory. Is

1 the directory data or metadata?

2 **A. Metadata.**

3 Q. So when Kantor applies the CRC hash to obtain
4 contents signatures for the inner files, is he applying
5 that CRC hash to the data or the metadata?

6 **A. Well, let me correct you a tiny bit --**

7 Q. Okay.

8 **A. -- because I think what he does is, takes the**
9 **already-existing CRC for each individual file. And that**
10 **CRC is over the data and not the metadata.**

11 Q. So the CRC hash that Kantor uses then is on
12 the data in the -- is a CRC hash of the data in the
13 inner files and not the metadata, correct?

14 **A. That's correct.**

15 Q. And when Kantor applies the addition modulo 2
16 to the 32 hash, to obtain the ZIP contents signature for
17 the Complaint ZIP file, is he summing up hashes of data
18 or hashes of metadata?

19 **A. Hashes of data.**

20 Q. Mr. Rhoa also asked you some questions about
21 sequences of bits and some questions about sequences of
22 people lined up to get into a football game.

1 Do you recall those questions?

2 A. Yes.

3 Q. Have you ever heard of a Fibonacci Sequence?

4 A. Certainly.

5 Q. What is a Fibonacci Sequence?

6 A. It's -- I can go on for hours, but you want
7 the short answer. It is the sequence that is produced
8 by starting with two 1s, and then every subsequent
9 number is the sum of the previous two.

10 Q. So without trying to test your math too hard
11 first thing in the morning, could you identify then the
12 first --

13 A. 1, 1, 2, 3, 5, 8, 13, 21, and then, you know,
14 13 plus 21, and then it's that thing plus.

15 Q. And so on and so on?

16 A. The Fibonacci.

17 Q. Have you ever heard of a random sequence?

18 A. Certainly.

19 Q. What is a random sequence?

20 A. Just a sequence produced by some random number
21 generated.

22 Q. Can you give an example of some random

1 sequence?

2 A. If I rolled a die and then wrote down the
3 number on the top from 1 to 6, and then rolled it again,
4 wrote down the number on the top, and appended that
5 number to the first number, then I would get a sequence
6 of results of the roll of the die, or I could flip a
7 coin and write down heads or tails, heads or tails, one
8 to zeros.

9 Q. So does a sequence of number have to include
10 every number in consecutive order?

11 A. No.

12 Q. And can there be gaps in the numbers such as
13 in a Fibonacci Sequence or in a random sequence?

14 A. Sure.

15 Q. I would like to ask you some questions --
16 well, Mr. Rhoa also asked you some questions about
17 paragraph 80 -- well, let me ask you to turn to the
18 declaration first. If we could find your '096
19 declaration, which is Exhibit No. EMC 1009, and I would
20 like to ask you to turn to paragraph 83.

21 Do you have paragraph 83 in front of you?

22 A. Yes.

1 Q. Now, Mr. Rhoa also asked you some questions
2 about paragraph 83 of your declaration concerning the
3 '096 patent. Do you recall those questions?

4 A. Yes.

5 Q. And he asked you, in particular, some
6 questions about Kantor's LOOKUP feature that you have
7 referenced in paragraph 83. Do you recall those
8 questions?

9 A. Yes.

10 Q. Okay. And in discussing Kantor's LOOKUP
11 feature, you reference here pages 97, 173 of Kantor, and
12 I believe you also said that page 96 was relevant.

13 Do you recall that testimony?

14 A. It's either 96 or 98 or possibly both.

15 Q. I'm going to ask you to also grab your copy of
16 the Kantor reference. And I actually would like to
17 start by asking you to turn to page 173 of Kantor.

18 A. Okay.

19 Q. Could you take a look at the first paragraph
20 of page 173, and then I'm going to ask you some
21 questions about it?

22 A. First paragraph meaning?

1 Q. LOOKUP.DOC.

2 A. Through LOOKUPCREF.BLT?

3 Q. I guess through the end of the discussion of
4 LOOKUP.

5 (Witness reviewing)

6 A. Okay.

7 Q. Is page 173 of Kantor one of the portions of
8 Kantor that you considered in formulating the opinions
9 in your '096 declaration?

10 A. Yes.

11 Q. Okay. And what does Kantor say here about the
12 LOOKUP feature?

13 A. It says -- the thrust of it is to help you
14 avoid uploading material that has already been uploaded.

15 Q. So is this portion of the manual then talking
16 about a feature, LOOKUP feature, that a remote -- a user
17 can use to avoid uploading duplicate or redundant
18 material?

19 MR. RHOA: Objection, leading.

20 A. So the you is the person that could do the
21 uploading. So that person is -- is sitting at a
22 different computer. So that person could be the user,

1 **yes.**

2 Q. So let me ask it this way:

3 When Kantor says LOOKUP works together
4 with FWKCS Version 1.22 -- and what is the FWKCS
5 reference?

6 A. I think it's the system that this document --
7 it's FWKCS on the title page and it says Version 1.22.

8 Q. So Kantor says on page 173, "'LOOKUP' works
9 together with FWKCS Version 1.22 to let you use large
10 BBSs as high-speed multi gigabyte remote access
11 reference libraries, and helps you avoid uploading
12 duplicate or redundant material."

13 Who do you understand the "you" to be in
14 that, that he's referring to, in that paragraph?

15 A. So that would be someone who would use the BBS
16 as a resource. And while this talks about uploading,
17 but perhaps that person also downloads things.

18 Q. And when Kantor says the LOOKUP feature helps
19 you avoid uploading duplicate or redundant material,
20 what does he mean by that?

21 A. He means that you can, via the contents
22 signature idea, see if the exact content of the thing

1 you wish to upload has already been uploaded by somebody
2 else, perhaps using another path with another file name.

3 Q. And then Kantor says "To support this
4 function" -- and again, the next sentence of page 173.
5 "To support this function, the BBS runs FWKCS Version
6 1.10 or later, remote inquiry option i."

7 What do you understand Kantor to be
8 saying there?

9 A. Let's see. So, actually, I have not thought
10 about that. I could speculate. Would you like me to?

11 Q. Let me come back to that.

12 What do you understand -- how do you
13 think a person of skill in the art reading this, what do
14 you understand that to be suggesting?

15 MR. RHOA: Objection calls for speculation.

16 A. I think he's qualifying the versions that are
17 needed to support various pieces of this. And he's
18 saying kindly check Option i. I would say a person of
19 skill would try to find what Option i is about.

20 Q. Option i refer to some sort of inquiry?

21 A. Remote inquiry Option i suggests, yes.

22 Q. So let's take a look then at page 97. And

1 page 97 is another one of the pages that you referenced
2 in your declaration, correct?

3 A. Yes.

4 Q. And Mr. Rhoa, I believe, also asked you about
5 pages 96 and 97 of Kantor, correct?

6 A. Yes.

7 Q. So if you turn to page 97, the last paragraph,
8 why don't you take a look at that?

9 (Witness reviewing)

10 A. Yes, I see it.

11 Q. Kantor says here, "A utility is provided,
12 LOOKUP.BAT, which the remote BBS user can use to
13 automatically create the material to send for the remote
14 contents signature inquiry to take place."

15 Do you see that?

16 A. Yes.

17 Q. Do you understand that to be referring to the
18 same feature that we were looking at on page 173?

19 A. Yes.

20 Q. And then why don't we take a look at page 96.
21 And again, you also discussed page 96 with Mr. Rhoa,
22 correct?

1 A. And here's the process remote inquiries --

2 Q. Actually, before I ask about that page --

3 A. -- but yes.

4 Q. Let me confirm something, before I ask you
5 about that.

6 Page 97, where Kantor refers to

7 LOOKUP.BAT --

8 A. Yes.

9 Q. -- do you understand that to be the user side,
10 the inquiry that the user would send?

11 MR. RHOA: Objection, leading.

12 A. So it says that "the remote user uses this."
13 So it is -- I just take it, I believe what it says.

14 Q. Okay. So if we turn to page 96 then. And I
15 want to ask you about the discussion beginning at the
16 middle of the page that starts with a little i?

17 A. Yes.

18 Q. You see where it says "i - process remote
19 inquiries"?

20 A. Yes.

21 Q. And this is the discussion you discussed with
22 Mr. Rhoa yesterday, correct?

1 Q. Okay. And what do you understand this Option
2 i to be doing?

3 A. So it says we're requesting a contents
4 signature search. So the person says, here's some
5 content signatures. Do you have the matching files
6 already?

7 And there's a very specific procedure
8 that the person is supposed to use, including putting
9 the -- the inquiries together and into a file and
10 zipping that file, so we get a ZIP file that is one
11 inner file. And that has to have a specific name and
12 then if you do all that, then you can exercise this
13 feature.

14 Q. And where does Kantor describe what the
15 feature is supposed to do?

16 A. So it's the paragraph that begins "The format
17 for the contents signatures is provided..." So these
18 are the ones you want to look up. They must be
19 presented in a ZIP file which contains only one file and
20 it has to have that funny name.

21 Q. So you were referring to the
22 second-to-the-last paragraph then --

1 A. Yes.

2 Q. -- correct?

3 A. Yes.

4 Q. And then that paragraph goes on to say, "If
5 the I option is used on the receiving BBS, then that
6 incoming zipfile is unzipped; the single FWKCSLOO.KUP
7 file (if it contains more than one contents _signature
8 line_ is sorted; and that list of contents_signature(s)
9 is used as an input for finding a (sic) matching
10 contents_signature(s).

11 What do you understand Kantor to be
12 saying there?

13 A. So this is describing the action at the BBS
14 site to look up a set of contents signatures that were
15 sent by the user in this very specific way. And it's
16 saying what it will do is first sort those contents
17 signatures, which is just a sensible thing to do, and
18 then those will be looked up in the database of contents
19 signatures, including the database of recently added and
20 not yet incorporated contents signatures.

21 Q. And do you understand it to include the -- do
22 you understand the reference to contents signatures here

1 to include the ZIP file contents signatures?

2 MR. RHOA: Objection, leading.

3 A. The passage does not restrict the contents
4 signatures. So I would assume that ZIP file contents
5 signatures would be included.

6 Q. Okay. Let me ask you to go up to the
7 paragraph that starts Option i. Are you there?

8 A. Yes.

9 Q. "Option i also provides potentially valuable
10 cross-search capabilities. For example, a user could
11 use this to find other files on a BBS which contain
12 material relating to a file he/she has, by learning in
13 which zipfiles the specific file appears, and then use
14 the y form of the TEST function to obtain full sets of
15 contents_signatures for all the files in each of those
16 zipfiles, and so on."

17 What do you understand Kantor to be
18 saying here?

19 A. So the user might be interested to know about
20 a certain file, not only that it exists in the BBS
21 already, but might like to know in what -- if it's a
22 member of a ZIP file on the BBS, what ZIP file is that

1 and what are the other files in there.

2 Q. Okay. And if you could turn to page 113 of
3 Kantor?

4 A. I'm there.

5 Q. And I'm going to ask you to read the second
6 half of this page and I'm going to ask you a few
7 questions.

8 (Witness reviewing)

9 A. So that's a lot going on this page, but I'll
10 listen to the question.

11 Q. Okay. Let me ask you first about, under the
12 heading "ELSE if not UPLOAD nor ATTACH," the second
13 paragraph down refers to a test. Do you see that?

14 A. Yes.

15 Q. Okay. And so is this section referring
16 generally to a test function?

17 (Witness reviewing)

18 A. It looks to be, yes.

19 Q. And the second-to-last paragraph states: "y -
20 list contents_signatures for all the files in a zipfile,
21 followed by its zipfile_contents_signature."

22 Do you see that?

1 **A. Yes.**

2 **Q.** Let me ask you -- actually, draw you back to
3 page 96 first, and then we'll come back to that.

4 On page 96, in describing Option i -- are
5 you back on 96?

6 **A. I am.**

7 **Q.** Kantor says that, in the paragraph that begins
8 "Option i". Option i also provides potentially valuable
9 cross_search capabilities. For example, a user could
10 use this to find other files on a BBS which contain
11 material related to a file he/she has, by learning in
12 which zipfiles the specific file appears, and then use
13 the y form of the TEST function to obtain full sets of
14 contents_signatures for all the files in each of those
15 zipfiles, and so on."

16 Do you see that?

17 **A. Yes.**

18 **Q.** And then when you go to page 113, there's a
19 reference to "y - list contents_signatures for all the
20 files in a zipfile followed by its
21 zifile_contents_signature."

22 Do you see that?

1 **A. Yes.**

2 Q. And can you describe the relationship between
3 the y form of the TEST function, referenced on page 96,
4 and the y flag reference referenced on page 113?

5 MR. RHOA: Objection, leading; assumes facts
6 not in evidence.

7 BY MS. VREELAND:

8 Q. Let me ask it this way:

9 Do you understand or not understand
10 the -- there to be a relationship between the reference
11 to the y form of the TEST function on page 96 and the y
12 flag on page 113?

13 **A. So they seem to be the same thing because they**
14 **describe the same functionality.**

15 Q. Now, Mr. Rhoa asked you about another
16 reference on page 55. Do you recall discussing page 55
17 with Mr. Rhoa?

18 **A. Yes.**

19 Q. Okay. And he asked you about a y command --

20 **A. Yes.**

21 Q. -- appears on this page; do you recall that
22 discussion?

1 A. Yes.

2 Q. Does this y command have anything to do with
3 the y form of the TEST function referenced on page 96 --
4 let me ask it this way instead:

5 When page 96 refers to the y form of the
6 test function, is it referring to the discussion we just
7 saw on page 113 or is it referring to the discussion on
8 page 55?

9 MR. RHOA: Objection, leading.

10 MS. VREELAND: How is that leading? Could you
11 describe the way it is leading and I'll re-ask.

12 MR. RHOA: If you asked him what is it
13 referring to, the question would be fine. You
14 asked him questions that led him to think it was
15 referring to one of two possible things.

16 MS. VREELAND: Okay.

17 BY MS. VREELAND:

18 Q. Do you believe that the reference to -- I'll
19 let you answer that question, and then we'll re-ask to
20 satisfy Mr. Rhoa.

21 MS. VREELAND: Could you read back the
22 question?

1 (Record Read)

2 A. So we did talk about the y on 113 having the
3 same functionality as the y on 96. So the new question
4 is about the one on 96 versus -- sorry. The one on 96
5 correspond to the one on 113 or the one on 55?

6 Q. Yes.

7 A. So I think we said, I said, that it does
8 correspond to the 113. So it only remains to see if the
9 same functionality is described under the use of the
10 letter y on page 55. And it seems no.

11 Q. And why is that?

12 A. Just the functionalities are different.

13 Q. Okay. Now --

14 A. Let me look more closely.

15 (Witness reviewing)

16 A. So on 113 and on the 96, the y flag option,
17 function, whatever it is, gets the contents signatures
18 for all the files in a ZIP file and also the ZIP's own
19 contents signature.

20 On page 55, the y option flag, whatever
21 this is, creates a CS, a contents signature, for a ZIP
22 file ignoring the fact that it is a ZIP file. And that

1 is an entirely different function.

2 Q. So mr. Rhoa also asked you if Kantor describes
3 using contents signatures in commands for LOOKUP.DOC and
4 LOOKUP.BAT. And he asked you -- and you said that you
5 didn't see that on pages 96 or 97.

6 Do you recall that testimony?

7 A. Yes.

8 Q. Now, what we just looked at -- let me ask it
9 this way:

10 LOOKUP.DOC and LOOKUP.BAT, do those
11 describe what's happening on the user's side or what's
12 happening on the BBS side or do those relate to what's
13 happening on the user's side or what's happening on the
14 BBS side?

15 A. I think that both participate.

16 Q. Okay. And what about the FWKCS software, is
17 that on the user side or the BBS side?

18 A. That is on the BBS side.

19 Q. So I would like to ask you -- actually, could
20 you look at page 97?

21 Does page 97 describe LOOKUP.BAT as user
22 side utility or BBS side utility?

1 (Witness reviewing)

2 A. It says that the remote user can use it to
3 automatically create the materials, so that suggests the
4 user side.

5 Q. So the FWKCS Option i processes the inquiries
6 on the BBS side, correct?

7 MR. RHOA: Objection, leading.

8 A. Would you please point me to a page?

9 Q. Yes, page 96.

10 MR. RHOA: Same objection.

11 (Witness reviewing)

12 A. Okay. Ask your question about --

13 Q. Let me ask it this way:

14 Mr. Rhoa asked you about the LOOKUP.DOC
15 and LOOKUP.BAT. I would like to ask you about the FWKCS
16 software.

17 And where does FWKCS software reside?

18 MR. RHOA: Objection beyond the scope of
19 cross.

20 A. That's software that runs at the BBS site.

21 Q. And is that described on page 96 that you
22 discussed with Mr. Rhoa?

1 MR. RHOA: Same objection.

2 A. Yes.

3 Q. Do you see references, for example, to
4 FWKCSLOO.KUP on page 96?

5 A. And you're referring to that peculiarly-named
6 file?

7 Q. Yes.

8 A. Yes, I see those.

9 Q. And does the FWKCSLOO.KUP software use
10 contents signatures?

11 MR. RHOA: Objection, beyond the scope of
12 cross; assumes facts not in evidence; also leading.

13 A. I lost the question now.

14 MS. VREELAND: Could you read it back?

15 (Record Read)

16 MR. RHOA: Same objection.

17 A. So do you mean the -- so I am confused what
18 you mean by the FWKCSLOO.KUP software and whether you're
19 referring to the processing of this file that has a
20 period between the second O of look and the K of look.

21 Q. Let me ask this way:

22 Could a BBS using FWKCS process a remote

1 inquiry requesting a search for a ZIP file contents
2 signature with Option i?

3 MR. RHOA: Objection, leading.

4 A. Yes.

5 Q. And is it described on page 96?

6 A. Yes.

7 Q. And where is this described on page 96?

8 A. It is the -- generally described in the first
9 couple of paragraphs, and specifically described in this
10 procedure in the paragraph that starts "the format for
11 the contents signatures..."

12 Q. Okay. And if that processing is done with the
13 y form of the TEST function, will you get all of the
14 contents signatures for all of the files within the ZIP
15 file?

16 MR. RHOA: Objection, leading.

17 A. That's just what it says in this paragraph.
18 I'm sorry, this paragraph, the paragraph that starts
19 Option i.

20 Q. And would Kantor's description of the LOOKUP
21 feature be sufficient or insufficient to enable a person
22 of ordinary skill in the art -- actually, let me go back

1 to your paragraph 83 of your declaration.

2 Paragraph 83, the first sentence, you say
3 "A person of ordinary skill in the art would have found
4 it obvious to modify the BBS commands, including the
5 download and/or read commands, so the commands would
6 accept contents-signatures or zipfile
7 contents-signatures to identify the files or zipfiles in
8 which to operate."

9 Do you see that?

10 A. Yes.

11 Q. Would Kantor's description of the LOOKUP
12 feature be sufficient or insufficient to allow a person
13 of ordinary skill in the art to modify the BBS commands,
14 including the download and read commands, to accept
15 contents signatures or ZIP file contents signatures?

16 A. Yes.

17 Q. Yes, meaning it would be sufficient or
18 insufficient?

19 A. Sufficient.

20 Q. Let's move on to Woodhill now. If you could
21 find your Woodhill?

22 A. I have that.

1 Q. Okay. Mr. Rhoa also asked you some questions
2 about the Woodhill reference, which is EMCVMW Exhibit
3 No. 1005, correct?

4 A. Yes.

5 Q. I would like to follow up with a few questions
6 on that. Do you recall Mr. Rhoa asking you if
7 Woodhill's backup procedure could be used to determine
8 if a particular binary object was present in other files
9 of the system?

10 Do you recall those questions?

11 A. I don't recall exactly, but I recall that
12 character of questions.

13 Q. Okay. Could you take a look please at
14 column 8 of Woodhill, lines 33 to 65, and could you read
15 that paragraph to yourself and I'll ask you some
16 questions?

17 (Witness reviewing)

18 A. Okay.

19 Q. So Mr. Rhoa limited his question to the backup
20 procedure. And I would like to ask the same question
21 more broadly.

22 If you could look, in particular, at

1 lines column 8 lines 62 to 65 of Woodhill, it says "In
2 this way, duplicate binary objects, even if resident on
3 different types of computers in a heterogeneous network,
4 can be recognized from their identical Binary Object
5 Identifiers."

6 Do you see that reference?

7 A. Yes.

8 Q. Does this portion of Woodhill disclose or not
9 disclose using a Binary Object Identifier to recognize
10 or to detect duplicate binary objects?

11 A. It does disclose that.

12 Q. Mr. Rhoa also asked you about Woodhill
13 self-audit feature, which I believe you said was
14 described in column 18.

15 Do you recall discussing the self-audit
16 feature with Mr. Rhoa?

17 A. Yes.

18 Q. And I believe you said that the self-audit
19 procedure uses the Binary Object Identification Record
20 to access a binary object.

21 Do you recall that testimony?

22 A. Yes.

1 Q. Okay. And is there a figure in the patent
2 that shows that Binary Object Identification Record?

3 A. The interior format is specified in Figure 3.

4 Q. Would the Binary Object Identification Record
5 in Figure 3 be shown as 58?

6 A. That's 58.

7 Q. And does that Binary Object Identification
8 Record include the Binary Object Identifier?

9 A. Yes, it does.

10 Q. And is that designated as 74 in Figure 3?

11 A. Yes.

12 Q. So Mr. Rhoa asked you if the specifications
13 specifically identifies what portion of the Binary
14 Object Identification Record is used to access the
15 binary object for the self-audit procedure.

16 Do you recall those questions?

17 A. Yes.

18 Q. Okay. And I would like to ask you something a
19 little bit different. I would like to ask if a person
20 of skill in the art would be able to infer from the
21 discussion in column 18 about the self-audit feature,
22 what part of the Binary Object Identification Record is

1 used to access the binary object for the self-audit
2 procedure?

3 A. A person of skill would take a Binary Object
4 Identifier and used that to look up the binary object.

5 Q. So a person of skill in the art would
6 recognize then the Binary Object Identifier in the
7 Binary Object Identification Record that would be used
8 to access the binary object, right?

9 MR. RHOA: Objection, leading.

10 A. The sensible thing would be to have, pardon
11 the expression, a hash table that would direct you to
12 the binary object based on the Binary Object Identifier.

13 Q. Mr. Rhoa also asked you some questions about
14 the features of Woodhill that correspond to claim 41 of
15 the '791 patent.

16 Do you recall those questions?

17 A. I don't recall them exactly, but I recall
18 being asked about that.

19 Q. Okay. I'm going to ask you to keep your copy
20 of Woodhill, but also take a look at the '791 patent
21 claims 41 and the '791 is EMC/VMware Exhibit 1001.

22 A. So I have '791. And where do you want me to

1 go?

2 Q. I want you to look at claim 41.

3 A. All right.

4 Q. Claim 41 refers to determining whether the
5 data item corresponding to the given data identifier is
6 present at the current location. Do you see that?

7 A. Yes.

8 Q. Okay. Do you recall discussing with Mr. Rhoa
9 that reference to a current location?

10 A. Yes.

11 Q. Okay. Now, if you could, I think these
12 questions will be easiest if you take a look at Woodhill
13 Figure 1. Can you just describe generally what Figure 1
14 of Woodhill is showing?

15 A. It's the, essentially, the hardware
16 infrastructure of the system with workstations,
17 computers, networks, and a backup server.

18 Q. Now, you assumed, in answering Mr. Rhoa's
19 questions about claim 41, that the current location was
20 one of Woodhill's local computers.

21 Do you recall that discussion?

22 MR. RHOA: Objection, leading.

1 A. I do not completely recall it, but I believe I
2 said that, yes.

3 Q. Okay. And where are the local computers shown
4 in Figure 1?

5 A. So the local computers would include the
6 things called "local computer" and also the user
7 workstations.

8 Q. So those would be designated item 20?

9 A. So 20 and 18, they're the computers on the
10 local area network; one of the area -- either the local
11 aerial network.

12 Q. I'm going to ask you to make a different
13 assumption. And I'm going to ask you to assume that the
14 current location referenced in claim 41 is the remote
15 backup server which is shown in Woodhill Figure 1 as
16 item 12.

17 A. Okay.

18 MR. RHOA: Objection, beyond the scope of the
19 cross; also leading.

20 BY MS. VREELAND:

21 Q. So why don't you -- and I'm going to give you
22 a minute to look at Figure 1 and look at the claim and

1 then I'm going to ask you to compare the language of
2 claim 41 to Figure 1, assuming that the current location
3 is the remote backup server.

4 Why don't you take a minute to look at it
5 and then I'll ask you the question.

6 MR. RHOA: Same objection.

7 (Witness reviewing)

8 A. Okay.

9 Q. So I'm going to ask you to compare Woodhill's
10 backup procedure to claim 41 assuming that the remote
11 backup server is the current location.

12 If you -- and the -- I guess the backup
13 procedure, as it is described in column 9, which I
14 think -- do you remember discussing the backup procedure
15 in column 9 with Mr. Rhoa in connection with claim 41?

16 A. No, but I believe you, if you say that's what
17 happened.

18 Q. Before I ask you the question, why don't you
19 take a look at the description of the backup procedure
20 in column 9.

21 (Witness reviewing)

22 A. Okay.

1 Q. Okay. If you assume in the analysis that the
2 current location in Woodhill is the remote backup
3 server?

4 A. Yes.

5 Q. Then if we were to look at claim 41, claim 41
6 refers to "determining whether the data item corresponds
7 to the given data identifier is present at the current
8 location." Do you see that?

9 A. Yes.

10 Q. If you assume that the current location is the
11 remote backup server, does Woodhill determine whether
12 the data item corresponding to the given data identifier
13 is present at the current location?

14 A. Yes.

15 MR. RHOA: Objection, leading.

16 A. Yes because it's described that way in
17 column 9.

18 Q. Can you explain?

19 MR. RHOA: Same objection.

20 A. So at the local -- you're determining at the
21 local, whether the data needs to be backed up, and
22 you're determining whether it is -- and meaning it is --

1 it needs to be backed up if it is not present at the
2 current location, being the backup server.

3 And if it is present, then you don't need
4 to back it up.

5 Q. Just for clarity of the record then, let me
6 just ask the same question, slightly different.

7 If you make the -- and it will be the
8 same question. If you make the assumption that the
9 current location is the remote backup server?

10 A. Yep.

11 Q. Do you have an opinion as to whether or not
12 Woodhill determines whether the data item corresponding
13 to the given data identifier is present at the current
14 location?

15 MR. RHOA: Objection, form.

16 A. Certainly, yes. And he does and it's
17 described in that passage in column 9.

18 Q. And if you assume that the current location is
19 the remote backup server, do you have an opinion as to
20 whether or not Woodhill meets the requirement of, based
21 on said determining, if said data item is not present at
22 the current location, fetching the data item from a

1 remote location in the system to the current location?

2 A. I lost the beginning of the question.

3 Q. Again, I'm asking you to assume in comparing
4 claim 41 to Woodhill, that the current location is the
5 remote backup server?

6 A. Yes.

7 Q. And my question now is whether or not you have
8 an opinion on whether Woodhill would then meet the last
9 requirement of claim 41 which reads: "Based on said
10 determining, if said data item is not present at the
11 current location, fetching the data item from a remote
12 location in the system to the current location"?

13 MR. RHOA: Objection, form.

14 A. Yes.

15 Q. And what is that opinion?

16 MR. RHOA: Same objection.

17 A. That that is taught in the passage in column
18 9.

19 Q. And can you explain how?

20 A. So that would be the backing up of a new
21 binary object from the remote location, which would be
22 one of the local computers in this context to the

1 current location which is the remote server in this
2 context.

3 Q. Give me a second to ask a follow-up question.

4 (Off Record Discussion)

5 (Record Read)

6 BY MS. VREELAND:

7 Q. Let me ask you another question about
8 column 9. Column 9 refers to new binary object and
9 modified binary object. Do you see those references?

10 (Witness reviewing)

11 MR. RHOA: Objection, leading.

12 A. I would disagree slightly that the new and
13 modified refer to a file and not to an individual
14 object.

15 Q. And do you have an opinion as to whether or
16 not the modified files -- the modified object would meet
17 the requirements of the last element of claim 41, based
18 on said determining if said data item is not present at
19 the current location, fetching the data item from a
20 remote location in a system to the current location?

21 MR. RHOA: Objection, lacks foundation.

22 A. So that expresses the idea that a changed

1 thing at the remote place needs to be backed up. That's
2 just what that means.

3 Q. And so would that also meet the limitation
4 then?

5 MR. RHOA: Same objection; also leading.

6 A. Yes.

7 Q. Okay. You've been asked a lot of questions
8 over the course of the last two days, and I would just
9 like to close with this question:

10 Have any of the questions you've been
11 asked or any of the discussions that you've had over the
12 course of this deposition changed any of your opinions
13 on the issues addressed in your '791, '280, '539, '544,
14 '662 or '096 declarations?

15 A. No.

16 MS. VREELAND: Thank you.

17 MR. RHOA: I'm going to have a few follow-ups
18 here.

19 MS. VREELAND: Okay.

20 MR. RHOA: This is called recross.

21

22

RE CROSS-EXAMINATION

1 BY MR. RHOA:

2 Q. Dr. Clark, does metadata have bits?

3 A. Yes.

4 Q. In Woodhill's backup procedure, what happens
5 when the Binary Object Identifier comparison fails to
6 turn up a match?

7 A. So in the context of backing up, then if there
8 is not a match, that means that -- that the current
9 version of the binary object is different from the old
10 version of the binary object, and so must be backed up.

11 Q. Does Woodhill describe deleting a binary
12 object based on a result of the Binary Object Identifier
13 comparison?

14 A. I don't know.

15 MS. VREELAND: Object to the last question as
16 beyond the scope.

17 MR. RHOA: Let the record show that that
18 objection was made well after the answer.

19 BY MR. RHOA:

20 Q. Does Woodhill ever compare a new Binary Object
21 Identifier to two prior identical Binary Object
22 Identifiers?

1 A. He suggests that in at least the passage on --
2 in column 2, which we discussed yesterday. And I can
3 find it if you wish.

4 Q. Well, in Woodhill's backup system, Woodhill
5 doesn't back something up unless it's changed, right?

6 A. That's correct.

7 Q. So then even if you were to argue that
8 Woodhill compares a Binary Object Identifier to two
9 previous versions, those two previous versions could
10 never be identical, could they?

11 MS. VREELAND: Objection outside the scope;
12 also object to the form.

13 A. So the situation is you have two identical
14 identifiers, and why would you have that? I think not.
15 I think that's right.

16 Q. So you would agree with my --

17 A. Yes.

18 Q. -- point there?

19 In Woodhill, is a Binary Object
20 Identifier a file name?

21 A. No.

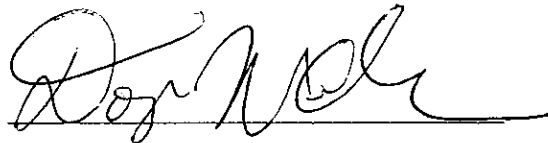
22 MR. RHOA: No further questions.

1 Same reservations as expressed on the record
2 at the close of the original cross.

3 MS. VREELAND: All right.

4 MR. RHOA: Thank you for your time, Dr. Clark.

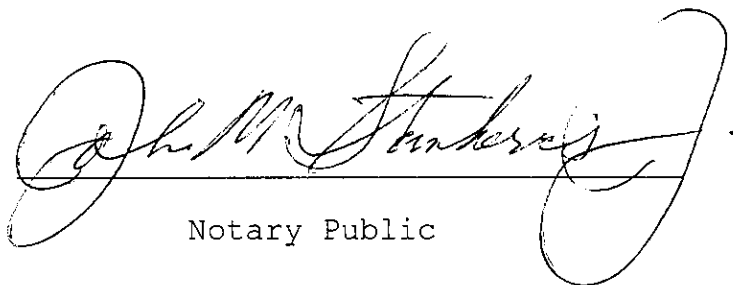
5 (Deposition concluded at 10:10 a.m.)
6
7

8 
9

10 SIGNATURE OF WITNESS
11

12 Subscribed and sworn to and before me

13 this 23 day of JULY, 2013.
14

15 
16
17 Notary Public
18

19 **NOTARIAL SEAL**
JOHN M. STANKOVICS, JR., Notary Public
City of Philadelphia, Phila. County
My Commission Expires April 7, 2015
20
21
22

1 C E R T I F I C A T E

2 COMMONWEALTH OF MASSACHUSETTS

3 COUNTY OF PLYMOUTH

4 I, Rosemary F. Grogan, a Registered
5 Professional Reporter and Notary Public duly
6 commissioned and qualified in and for the Commonwealth
7 of Massachusetts, do hereby certify:

8 That DOUGLAS W. CLARK, PH.D., the witness
9 whose deposition is hereinbefore set forth, was duly
10 identified and sworn by me, at the office of Wilmer
11 Cutler Pickering Hale And Dorr LLP, 60 State Street,
12 Boston, Massachusetts, on July 11, 2013, between the
13 hours of 9:05 a.m. and 10:10 a.m., and that the
14 foregoing transcript is a true record of the testimony
15 given by such witness to the best of my ability.

16 I further certify that this was the Redirect
17 Examination and Recross Examination deposition of
18 Douglas W. Clark, Ph.D., taken on behalf of EMC/VMware,
19 and counsel for Patent Owner, respectively.

20 I further certify that I am not related to any
21 of the parties in this matter by blood or marriage, and
22 that I am in no way interested in the outcome of this
matter.

IN WITNESS WHEREOF, I have hereunto set my
hand and affixed my notarial seal this 13th day of July,
2013.

16

17

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19

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21

22



Rosemary F. Grogan, RPR

CSR No. 112993

My Commission Expires: December 15, 2017

ERRATA SHEET

Deponent: Douglas W. Clark, Ph.D.

Date: July 10, 2013

Page/Line	Correction
21:4	"Ms.", not "Miss"
74:21	"the sum", not "some"
74:22	"the sum", not "some"
83:15	"addition", not "additional"
83:18	"and", not "in"
84:8	"digest", not "digress"
90:17	"files' own 32-bit CRCs", not "file's own 32 bits CRC"
115:14	"can do", not "concatenate"
128:17	"quantity", not "quality"
129:5	"sum", not "some"
153:19	"hashes, then", not "hashes than"
167:8	"are: link", not "are linked"
190:1	"revising: the", not "revising"
219:10-11	"either of the local area networks", not "either the local aerial network"

7/23/13

Date



Douglas W. Clark, Ph.D.

IPR2013-00082 (U.S. Patent No. 5,978,791)
IPR2013-00083 (U.S. Patent No. 6,415,280)
IPR2013-00084 (U.S. Patent No. 7,945,544)
IPR2013-00085 (U.S. Patent No. 7,945,539)
IPR2013-00086 (U.S. Patent No. 7,949,662)
IPR2013-00087 (U.S. Patent No. 8,001,096)



NOTARIAL SEAL

JOHN M. STANKOVICS, JR., Notary Public
City of Philadelphia, Phila. County
My Commission Expires April 7, 2015

Sworn to and subscribed before me
this 23 day of JULY 2013