UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

****

GOOGLE LLC,

Petitioner,

vs.

SECURITY FIRST INNOVATIONS, LLC,

Patent Owner.

IPR2024-00212 (Patent 11,178,116 B2)

IPR2024-00214 (Patent 11,068,609 B2)

IRP2024-00215 (Patent 10,452,854 B2)

_____/

REMOTE VIDEOCONFERENCE DEPOSITION OF

AVIEL D. RUBIN, Ph.D.

TAKEN ON DECEMBER 12, 2024

10:36 a.m.

Reported by: Renee J. Ogden, CSR-3455, RPR

Danielle O'Connor, RPR, CRR

MAGNA LEGAL SERVICES

Google Exhibit 1099
Google v. SFI
IPR2024-00214

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1 Thursday, December 12, 2024
2 10:36 a.m.
3
4 AVIEL D. RUBIN, Ph.D.,
5 was thereupon called as a witness herein, and after
6 having first been duly sworn or affirmed to testify
7 to the truth, the whole truth and nothing but the
8 truth, was examined and testified as follows:
9 EXAMINATION
10 ATTORNEY NIEBERG:
11 Q. Good morning, Dr. Rubin.
12 A. Good morning.
13 Q. My name is Greg Nieberg with Wolf Greenfield, and I
14 represent the Google petitioner in these matters.
15 Before I begin, have you been deposed
16 before?
17 A. Yes, I have.
18 Q. Approximately how many times?
19 A. In the ballpark of around 80 times.
20 Q. Okay. So you are well familiar with how these go.
21 But in any case -- well, how many IPR
22 depositions have you done?
23 A. I'd have to look on my resume, but maybe a dozen or
24 so. Possibly more.

1 Q. You know, unlike maybe some of your district court
2 depositions, there is no videographer here. It's
3 all just on a transcript. So if I ask any
4 question -- when I ask you questions, please
5 respond orally, not just with like a shake of the
6 head or a nod, because that won't show up on the
7 transcript.
8 Is that okay?
9 A. Yes.
10 Q. And for likewise reasons, we should avoid talking
11 over each other, because it will get challenging
12 for the court reporter to keep a clean transcript.
13 Is that okay?
14 A. Yes.
15 Q. Okay. So for -- we're here to talk about three IPR
16 matters, correct?
17 A. Yes.
18 Q. Okay. They involve the 11 -- well, they involve
19 three patents, right?
20 A. Yes.
21 Q. Okay. And the one is U.S. Patent 11,178,116; is
22 that right?
23 A. Correct.
24 Q. And another one is 11 -- well, for that patent, if

1 I refer to it as the '116 patent, you'll know which
2 one I'm referring to?
3 A. Yes.
4 Q. Okay. And another patent is US 11,068,609 --
5 A. Yes.
6 Q. -- correct?
7 And if I refer to that as the '609
8 patent, you will know what I'm referring to?
9 A. Yes.
10 Q. Okay. And if I -- the other patent is 10,452,854,
11 correct?
12 A. Yes.
13 Q. And if I refer to that as the '854 patent, you will
14 know which one I am referring to, correct?
15 A. Yes.
16 Q. Okay. For the record, did you receive a box of
17 hard copies of materials?
18 A. Yes.
19 Q. If you prefer an electronic copy of something, I
20 could drop that into the chat, but I know some
21 people prefer hard copies. And also maybe if
22 there's a problem electronically, at least you will
23 have a hard copy. Okay?
24 A. Okay.

1 Q. Do you have any other materials in front of you
2 other than the hard copies of materials that I sent
3 you?
4 A. I do not.
5 Q. Okay. Do you have any corrections for any of your
6 declarations in these matters that you would like
7 to make?
8 A. I do.
9 Q. You do. Okay. Could you tell me where you have a
10 correction?
11 A. Sure. So I'm opening up the '854 binder that you
12 sent me to my declaration, which I'll take out.
13 Q. Just for the record, this is your declaration for
14 IPR case number -- IPR 2024-00215?
15 A. Yes.
16 Q. It's Exhibit 2033 in that matter?
17 A. Yes.
18 Q. All right. The second, declaration of Aviel V.
19 Rubin, Ph.D.?
20 A. Yes.
21 Q. Okay.
22 A. Okay. So if you turn to page 60 --
23 Q. Okay.
24 A. -- you see at the bottom of the page there's a

1 table. It says, "The '854 is securing data."
2 On the next page on 61 is a similar
3 table structure and it says, "Hayhurst's field is
4 decentralized media delivery." It looks like it
5 accidentally copied the last box, the claims from
6 the previous page into here and not what it should
7 be.
8 Q. What did you think it should be on page 61 at the
9 bottom of paragraph 103?
10 A. So I just need to pull up the Hayhurst reference.
11 Q. Okay. And the Hayhurst reference, for the record,
12 in the -- at least I think in the '854 'and '609
13 matters is marked as Exhibit 1007, correct?
14 A. Yes.
15 Q. I could check it. I don't recall -- that
16 document -- Hayhurst is also in the '116 matter,
17 correct?
18 A. Yes. And I have, I believe, the same issue in that
19 one.
20 Q. Okay. You have -- okay. So if you correct it
21 here, we'll apply it to -- consider it for both.
22 A. Right. I also have to check that -- I have this
23 type of figure in at least two places. Everywhere
24 that I have that figure, I have that mistake.

1 Q. The figure meaning the table that you prepared?
2 A. Right.
3 Q. Okay. How long do you think it would take you to
4 read into the record what you think the table
5 should be?
6 A. Not too long.
7 Q. Okay.
8 A. I think if I were to work on this longer, I might
9 come with up something more precise, but I think
10 decentralized media delivery is an appropriate
11 answer.
12 Q. That is what you would put in the claims for
13 Hayhurst?
14 A. Yes.
15 Q. Do the claims recite -- do Hayhurst claims recite
16 decentralized media delivery?
17 A. Well, they -- if you look at Claim 1, it talks
18 about a method of delivering a media file
19 comprising of segmenting it into a plurality of
20 segments -- I'm paraphrasing -- and distributing
21 those segments of the media file among network
22 subscribers.
23 So that is decentralized media delivery.
24 I think that's a good summary of what the claims

1 are about.
2 Q. Okay. So for wherever you have a box talking about
3 Hayhurst's field, you would replace -- in the
4 claims row you would put decentralized media
5 delivery; is that right?
6 A. I would say the claims concern decentralized media
7 delivery.
8 Q. When did you detect this typo or error in your
9 declarations?
10 A. I detected it recently when I was preparing for the
11 deposition and rereading my reports.
12 Q. So in preparing for the deposition, you read
13 through all of your declarations?
14 A. I did.
15 Q. Okay. And did you have any other corrections you
16 wanted to make?
17 A. Just if that same issue appears somewhere else,
18 then yes. No other issues.
19 Q. Okay. So to start, I would like to try and get on
20 the same page about some claim terms or terms in
21 the patent. So all these -- the three SFI patents
22 at issue, they all use the term "share," correct?
23 A. Let me just pull up those patents.
24 Q. To be clear, I'm referring to not just the claims

1 of these patents and also their written
2 descriptions the term "share" appears, correct?
3 A. Do you want to point me to some specific place in
4 the specification that you are referring to?
5 Q. Sure. I think it's a lot of places, but let's
6 try -- do you have an '854 patent?
7 A. I do.
8 Q. Figure 21, for example.
9 A. So Figure 21 does talk about shares.
10 Q. What are shares?
11 ATTORNEY LOWENSTEIN: Objection, scope.
12 A. So are you referring to the data share or the key
13 share with that question?
14 BY ATTORNEY NIEBERG:
15 Q. Let's start with the data share.
16 What is a data share?
17 ATTORNEY LOWENSTEIN: Objection, scope.
18 A. So the data shares are the result of splitting the
19 data according to a session key. It's split into
20 shares.
21 BY ATTORNEY NIEBERG:
22 Q. Okay. So the data set is split into two or more
23 shares?
24 A. At a high level, that's correct.

1 Q. And then in Figure 21's example, each of the shares
2 can be encrypted by a share key; is that right?
3 A. So in Figure 21, it shows under parse that each of
4 the shares is encrypted under a share key.
5 Q. Let's walk through it. I'm not disagreeing with
6 that, but I just want to -- there is a lot of
7 redundant words in here. It gets confusing.
8 So there is a data set at the top, data
9 to be parsed, right?
10 A. Yes. I'm just -- to follow along, I'm looking in
11 the specification for the text that describes this
12 figure.
13 Q. And I believe that it begins -- Figure 21 begins at
14 the very bottom of column 56, but the most of it --
15 the figure is really primarily described in column
16 57 starting at line 11.
17 A. Right. So back to your question --
18 Q. Okay. In Figure 21 at the top you start with a
19 data set, correct?
20 A. Right. You start with data to be parsed.
21 Q. Okay. Well, the claims refer to a data set; is
22 that right?
23 A. Which claim are you --
24 Q. Well, for example, the '854 Claim 1 in column 83 of

1 the '854 patent.
2 A. It does talk about a method for securely storing a
3 data set.
4 Q. So in Figure 21, is there a difference between the
5 data to be parsed and the data set?
6 ATTORNEY LOWENSTEIN: Objection, scope.
7 A. I have not done the analysis yet as to whether
8 Claim 1 is a direct -- Figure 21 is a direct
9 embodiment that Claim 1 is using, but I would say
10 that the data set of Claim 1 is comparable to a
11 data set to be parsed in Figure 21.
12 BY ATTORNEY NIEBERG:
13 Q. Then the data to be parsed is encrypted with a
14 session master key; is that right?
15 A. Yes.
16 Q. Okay. And then the arrow directly below that says
17 "split data according to session key."
18 Do you see that?
19 A. I see that.
20 Q. Okay. It says split data, but it's splitting the
21 encrypted data, correct?
22 A. Yes. The encrypted data is then split.
23 Q. Okay. And then the very -- under parse it says:
24 "Encrypted Data Share 1."

1 Do you see that?
2 A. I do.
3 Q. And is it called encrypted -- well, it's called
4 encrypted data share because it's a share of the
5 encrypted data; is that correct?
6 A. That's correct.
7 Q. Okay. And so the data share has not yet itself
8 been encrypted; is that right?
9 A. That isn't what is shown at this stage.
10 Q. Maybe because of that negative. What is not shown
11 at that stage?
12 A. Encrypting the share itself.
13 Q. Okay. Right. At that point the share itself has
14 not been encrypted; is that correct?
15 A. The data has been encrypted, so it's an encrypted
16 data share, but that encrypted data share has not
17 been encrypted.
18 Q. Okay. In Figure 21, the Encrypted Data Share 1 is
19 also paired with a portion of the session key; is
20 that correct?
21 A. There is a share of the session key which is
22 grouped together in this figure with the Encrypted
23 Data Share 1.
24 Q. Okay. And then the patent says it generates a

1 bunch of share keys.
2 Do you see that?
3 A. If you are referring to the line that goes down and
4 it says "generate Share 1 key" and it says
5 "generate Share 2 key"?
6 Q. Yes.
7 A. Yes.
8 Q. So in this example there's four encrypted data
9 shares and so there are four share keys generated;
10 is that right?
11 A. That's what's shown in this picture.
12 Q. Okay. And then each of the encrypted data shares
13 plus session key share is encrypted by a
14 corresponding share key?
15 A. Can I hear that again, please?
16 Q. Yes. So the blocks directly under where it says
17 "parse" that's a pairing of an encrypted data share
18 and a session key share, right?
19 A. Right.
20 Q. And then that first piece of data will be encrypted
21 by Share 1 key, correct?
22 A. When you say "first piece of data," you're
23 including the Session Key Share 1 and the Encrypted
24 Data Share 1?

1 Q. Yeah. Well, let's -- is there a term that we could
2 agree just for that block together, rather than
3 talk about both pieces individually? Can I call it
4 data share plus key share?
5 A. Sure.
6 Q. Okay. So a data care plus key share is encrypted
7 by a share key?
8 A. That's what's shown in the figure.
9 Q. Okay. Let me take a step back.
10 So a -- what does the term "share"
11 represent?
12 ATTORNEY LOWENSTEIN: Objection, scope.
13 A. So the share is the thing that something gets split
14 into.
15 BY ATTORNEY NIEBERG:
16 Q. Okay. And then it becomes an encrypted share; is
17 that right?
18 A. If you take the share --
19 ATTORNEY LOWENSTEIN: Objection, form.
20 A. Can I hear the question again?
21 BY ATTORNEY NIEBERG:
22 Q. Yep. So you have data and you split it into
23 shares; is that correct?
24 ATTORNEY LOWENSTEIN: Objection, form.

1 A. It's confusing when you say that I have it. So
2 maybe refer to the picture.
3 BY ATTORNEY NIEBERG:
4 Q. Sure. But well, let me -- when the patent talks
5 about -- in Figure 21 when it has an encrypted data
6 share, you know, as we talked before, that has not
7 yet been individually encrypted, correct?
8 A. Well, at some point it does. But when you're in
9 the parse portion of the figure, it's showing that
10 the data share has been encrypted, but the pair of
11 Encrypted Data Share 1 plus Session Key Share 1
12 together in that stage of this figure hadn't been
13 encrypted yet.
14 Q. Okay. And then after it's been encrypted, Figure
15 21 calls it encrypted shares. So, for example, it
16 says Encrypted Share 1.
17 Do you see that?
18 A. Yes.
19 Q. Okay. So Encrypted Share 1 is data -- Encrypted
20 Data Share 1 plus Session Key Share 1, correct?
21 A. Right.
22 Q. Okay. So those two pieces together are Share 1?
23 A. That's what is being depicted here.
24 Q. Okay. And then it becomes Encrypted Share 1; is

1 that right?
2 A. After it gets encrypted, yes.
3 Q. Okay. So the share is -- the term "share" is data
4 before it's been encrypted and then the term
5 "encrypted share" is that share after it's been
6 encrypted?
7 ATTORNEY LOWENSTEIN: Objection, scope.
8 A. So in this figure, that's how these are referred
9 to.
10 BY ATTORNEY NIEBERG:
11 Q. Okay. And in Figure 21's embodiment, as we talked
12 about, there are four shares and four share keys,
13 correct?
14 A. Which part of the figure are you looking at now?
15 Q. Well, as we just talked about, in this figure the
16 term "share" represents that combination of
17 encrypted data share plus session key share?
18 A. So you are talking about the bottom part of the
19 figure?
20 Q. Yes, the parallelogram, I guess. Where it says:
21 Encrypted Share 1 and then (data/session key)?
22 A. Right.
23 Q. So there are four of these, correct?
24 Let me take us back. The figure says

1 "N" of those.
2 Do you see that?
3 A. Right. There's Key 1, Key 2, Key 3 and then Key N
4 in the key portion of the figure.
5 Q. So N could be just four, right?
6 A. I believe it's a variable that could take on any
7 value is the intention of this.
8 Q. Could the value take on just 2?
9 A. I haven't looked at that. I would have to study
10 this.
11 Q. Well, do the -- put that aside.
12 Okay. So this figure, it's only showing
13 four boxes. The fourth one has a variable N,
14 right?
15 A. Be very precise, because there are a lot of boxes.
16 Q. Okay. So the encrypted share box at the very
17 bottom, by the "obfuscate"?
18 A. Right.
19 Q. Okay. There are four of them, right?
20 ATTORNEY LOWENSTEIN: Objection, form.
21 A. Right.
22 BY ATTORNEY NIEBERG:
23 Q. And you said N could take on any number? So it
24 could be just four rather than say N -- Encrypted

1 Share N, it could say
2 Encrypted Share 4 if there were four; is that
3 right?
4 A. So in this figure, if N were equal to 4, then there
5 would be four.
6 Q. Okay. So there would four encrypted shares and
7 four Key 1 through 4 at the bottom?
8 A. Right.
9 Q. Okay. And then what Figure 21 does is it calls it
10 obfuscated. It swaps a key with an encrypted
11 share; is that right?
12 A. I would --
13 ATTORNEY LOWENSTEIN: Objection, form.
14 A. I would say that it -- I don't know about the word
15 "swap." I don't recall seeing anything about
16 swapping. But the shares are stored with a
17 different index to the key than the number of the
18 share.
19 BY ATTORNEY NIEBERG:
20 Q. Okay. So when it is 4, so for example, Encrypted
21 Share 1 in this example would be paired with key 4;
22 is that right?
23 A. With what 4?
24 Q. Key 4.

1 A. Okay. I didn't hear the word "key." That's what's
2 shown here if N is 4. Then it shows Encrypted
3 Share 1 and then key 4.
4 Q. Okay. If there are -- and so the obfuscation step
5 is, as you said, it stores a share with a different
6 index to the key than the number of the share; is
7 that right?
8 A. Well, a key -- you know, because there's an N I use
9 the word "index," but it's a key number like Key 1,
10 Key 2, Key 3. And whatever that number is, is
11 different from the number when you say encrypted
12 share number, whatever that number is. So you
13 wouldn't have Encrypted Share 3 with Key 3.
14 Q. Why not?
15 A. That is what's being disclosed here.
16 Q. Okay. How many different combinations of encrypted
17 share with keys are possible in this embodiment
18 where there's only four shares, encrypted shares?
19 A. I haven't done that calculation.
20 Q. Do you think if I say it's four factorial, would
21 you disagree?
22 A. I would sit down and do the math and figure it out.
23 Q. How long do you think it would take you to come up
24 with the combinations of four shares and four keys?

1 A. I'm under -- the kind of pressure I'm under right
2 now, I'm not really sure. This is a pretty simple
3 math problem though.
4 Q. That's a pretty simple math problem. Well, let's
5 do it. I think we could do it.
6 Encrypted share 1 with Key 1, is that a
7 possibility?
8 A. No.
9 Q. No? Okay, so it's actually less than 24. So it
10 would be Encrypted Share 1 with Key 2? That's
11 right?
12 A. That's one.
13 Q. Encrypted Share 1 with Key 3?
14 A. That's a possibility.
15 Q. And Encrypted Share 1 with Key 4?
16 A. That would be a possibility.
17 Q. Okay. Now, from Encrypted Share 2, it can't be Key
18 2, right?
19 A. Right.
20 Q. And it can't be one of the keys used for Share 1,
21 right?
22 A. Right.
23 Q. So there's only two left, right?
24 A. Right.

1 Q. Let's, for example, say if Encrypted Share 1 had
2 Key 2, Encrypted Share 2 can be Key 1, Key 3, or
3 Key 4, right?
4 A. Right.
5 Q. You do the same process for the other two shares,
6 right?
7 A. It would be similar.
8 Q. Is the number -- well, we could go through it, but,
9 as you said, it's a pretty simple calculation. You
10 could write out all the different combinations,
11 right?
12 A. You could do that.
13 Q. And how long do you think it would take a person of
14 skill to write out those combinations if there's
15 four shares and four keys?
16 A. Four shares, it wouldn't take long.
17 Q. Okay. Do you have your '854 declaration?
18 A. Yes.
19 Q. Before we move on, as the number of shares
20 decreases, the number of the combinations decreases
21 as well; is that correct?
22 A. I haven't looked at that before, but that does seem
23 to make sense.
24 Q. And if there are two shares, how many ways is there

1 to obfuscate the sharing key?
2 A. I haven't looked at that, but off the top of my
3 head I would say there's only one way.
4 Q. That sounds right to me too.
5 So if we go to your '854 declaration,
6 and if you go to paragraph -- and just for the
7 record, again, it's Exhibit 2033 in the '854
8 matter.
9 And if you turn to paragraph 42 --
10 A. Okay.
11 Q. Before this -- if at any point you want to take a
12 break, just let me know, we can take a break. But
13 if there's a question pending, I'd ask you to
14 answer that question before taking a break.
15 Is that okay?
16 A. Sure. And I just want to point out I'm on Eastern
17 Time.
18 Q. I am as well.
19 A. Okay. Yeah, I was hoping we could just kind of go
20 until noon-ish for the first session and then take
21 a short lunch break.
22 Q. That works for me. But if at any point before that
23 you need to take a bathroom break or an emergency
24 comes up, just let me know.

1 A. Okay.
2 Q. So in paragraph 42 you have some discussion about
3 the '854 patent workgroup key.
4 Do you see that?
5 A. Yes.
6 Q. And then you say that, "The workgroup key is an
7 example of an external key in the '854 patent"; is
8 that right?
9 A. I do.
10 Q. Okay. Is that the only example of an external key
11 that's discussed in your declaration?
12 A. So for this question, I would appreciate if you
13 have an electronic copy that I can search and you
14 can --
15 Q. Sure. Do you recall discussing any other examples
16 of external keys in the '854 patent?
17 A. I do recall at some -- something in the case
18 discussing external keys. I don't recall if I gave
19 other specific examples or not.
20 Q. Okay. I just dropped into the chat window your --
21 an electronic copy of your '854. It doesn't list
22 which matters, so I'm going to -- if it's okay with
23 you, I'm going to also give you the '609, but I'm
24 going to put in front of it '609 Exhibit 33,

1 otherwise it'll get confusing.
2 A. Oh, I see. The title of the file doesn't have
3 the --
4 Q. Right. So I'll just do that as well, just so you
5 have it. And I'll do the same for the '116 --
6 again, it's Exhibit 2033, but it doesn't tell you
7 which one it is on the title PDF file, so...
8 Have you been able to download and
9 access it?
10 A. Yeah. I'm in the '854 patent, and I'm doing a
11 search for external.
12 Q. You're -- I'm sorry. You're in the patent or your
13 declaration?
14 A. I'm sorry. In the declaration.
15 Q. Okay.
16 A. In paragraph 49.
17 Q. 49, okay.
18 A. I take on the petitioner's assumption here that
19 Orsini's session master key corresponds to the
20 claimed external key.
21 Q. Okay.
22 A. So I guess this is not something in this paragraph
23 I'm putting forward, but I'm signing that the
24 petitioner refers to the session master key. It's

1 an external key.
2 Q. Okay. But my question is different.
3 I'm asking what, if any, other examples
4 that you think is the -- an external key is
5 described in the '854 patent and that you discuss
6 in your declaration?
7 A. I agree that the session master key is an external
8 key.
9 Q. Okay. So the session master key is an external
10 key; the workgroup key is an external key?
11 A. Yes.
12 Q. Do you identify any other external keys described
13 in the patent?
14 A. I don't see anywhere else in the '854, but if it's
15 in there, then my report speaks for itself.
16 Q. Okay. So you're not finding any other examples
17 that you identified as you sit here right now of an
18 external key described in the patent?
19 A. I just see the ones we talked about. But if
20 there's something else in my report, then the
21 report speaks for itself.
22 Q. Okay. So back to paragraph -- oh, I'm sorry,
23 one -- before we move on, the '609 declaration, if
24 you want to get that open, if you turn to

1 paragraph 41 --
2 A. I'm sorry. I just have to go to a different
3 binder. It's going to take --
4 Q. Sure. And you also have the electronic I put in
5 the chat as well.
6 A. Okay. Let's try to work with that, and then we'll
7 see.
8 Q. And my question is just in the terminology of the
9 claims of the '609, rather than external key, it
10 refers to a first key; is that right?
11 A. That's right.
12 Q. Okay. And in your paragraph 41 of your '609
13 declaration, you say that the workgroup key is an
14 example of a "first key"?
15 A. Yes.
16 Q. Okay. And I apologize. Back to the '854
17 declaration.
18 A. Okay.
19 Q. So in paragraph 42 --
20 A. Yes.
21 Q. Okay. So in paragraph 42, you discuss a workgroup
22 key, and you say the workgroup key is an example of
23 an "external key," right?
24 A. Right.

1 ATTORNEY LOWENSTEIN: Objection --
2 BY ATTORNEY NIEBERG:
3 Q. And in --
4 ATTORNEY LOWENSTEIN: Objection, form.
5 BY ATTORNEY NIEBERG:
6 Q. And then in paragraph 42, you cite a few different
7 portions of the '854 patent.
8 Do you see that?
9 A. In paragraph 42?
10 ATTORNEY LOWENSTEIN: Which paragraph?
11 ATTORNEY NIEBERG: 42. His paragraph
12 4 --
13 BY ATTORNEY NIEBERG:
14 Q. In your declarations paragraph 42, there are
15 several citations to the '854 patent; is that
16 correct?
17 A. Yes.
18 Q. And those are column 79, line 66 through column 80,
19 line 1.
20 That's one citation; is that right?
21 A. Yes.
22 Q. And then the next one is column 80, lines 1 through
23 4.
24 Do you see that?

1 A. Yes.
2 Q. And then the last two are Figure 39 and column 80,
3 lines 30 to 33.
4 Do you see that?
5 A. I see that.
6 Q. Okay. Is it your opinion that the embodiments
7 shown in Figure 39 and described in the places
8 you've cited is an embodiment that can be mapped to
9 Claim 1 of the '854 patent?
10 ATTORNEY LOWENSTEIN: Objection, scope.
11 A. I don't recall doing that analysis.
12 BY ATTORNEY NIEBERG:
13 Q. Well, why are discussing the workgroup key in
14 paragraph 42, if it cannot be mapped to Claim 1 of
15 the '854 patent?
16 ATTORNEY ELLIOTT: Objection, form.
17 A. I didn't say that it can't be mapped. I just said
18 that I have not gone through the exercise of
19 determining whether this figure is mapped onto this
20 claim or not.
21 BY ATTORNEY NIEBERG:
22 Q. Well, what does the workgroup key matter if it
23 doesn't provide support for Claim 1?
24 ATTORNEY ELLIOTT: Objection, form.

1 A. The claims were written within the context of the
2 specification, and so I think it's relevant to
3 point that out.
4 BY ATTORNEY NIEBERG:
5 Q. Are you -- how is the workgroup key relevant to
6 understanding Claim 1?
7 A. The workgroup key is an example used in the
8 embodiment in the specification to describe an
9 external key.
10 Q. Is that all it is; it's just an external key?
11 A. I'd have to look to see if there are other things
12 that it is, but it's an external key.
13 Q. Okay. Do you -- well, you -- let's see.
14 So you write in paragraph 42, at the
15 very bottom, "the '854 introduces an 'external key'
16 (i.e., the workgroup key) used in an encryption
17 operation to further secure data, and teaches the
18 benefits of this approach."
19 Is that right?
20 A. That's what it says.
21 Q. Okay. And then if you go to '854, Claim 1, it says
22 on -- on 83, starting at line 32, "Performing an
23 encryption operation on the external key to further
24 secure the plurality of data chunks."

1 Do you see that?
2 A. No. Sorry. I see -- can you say it again?
3 Q. Sure. I apologize if it was too -- wasn't clear,
4 for some reason.
5 On Claim 1 of the '854 patent -- it's in
6 column 83 --
7 A. Right.
8 Q. -- and there at line 32, there's a limitation
9 beginning "Performing."
10 A. Right.
11 Q. And it says, "Performing an encryption operation
12 based on the external key to further secure the
13 plurality of data chunks."
14 Do you see that?
15 A. I do.
16 Q. Okay. Now, if you go back to paragraph 42 --
17 A. Okay.
18 Q. -- and you -- your last sentence says, "The '854
19 introduces an 'external key' (i.e., the workgroup
20 key) used in an encryption operation to further
21 secure data, and teaches the benefits of this
22 approach."
23 Do you see that?
24 A. Yes.

1 Q. My question is: Are you saying that the '854 uses
2 the workgroup key to further secure data chunks?
3 A. I mean, I'm saying what I wrote, which is that the
4 '854 introduces an external key used in an
5 encryption operation to further secure data, and
6 teaches the benefits of this approach.
7 Q. Do you cite anywhere where the patent describes an
8 example of further securing data chunks in an
9 encryption operation?
10 A. Can I hear the question again?
11 Q. Do you cite anywhere where the patent describes an
12 example of further securing data chunks in an
13 encryption operation?
14 ATTORNEY NIEBERG: In case I misspoke,
15 the realtime says "distributes an example." I
16 thought I said -- I meant to say "describes an
17 example of further securing" --
18 THE REPORTER: You did.
19 ATTORNEY NIEBERG: -- "data chunks in an
20 encryption operation."
21 THE REPORTER: You did. That was a
22 typo. Sorry.
23 ATTORNEY LOWENSTEIN: Maybe just...
24 ATTORNEY NIEBERG: Yeah. I'll say it

1 again. So, yeah, I'll withdraw that question.
2 BY ATTORNEY NIEBERG:
3 Q. And so the question again is: Do you cite anywhere
4 in your declaration where the patent describes an
5 example of further securing data chunks in an
6 encryption operation?
7 A. So paragraph 46.
8 Q. Okay. Is that your answer?
9 A. So the first sentence says that, "I note that the
10 parties appear to agree that Claim 1 requires the
11 generation of data chunks from a data set, and that
12 the data chunks must first be encrypted with a
13 distinct encryption key before the plurality of
14 data chunks is 'further secured' with 'an
15 encryption operation based on the external key.'"
16 Q. Okay. But that's talking about what the claim
17 requires; is that right?
18 A. Right.
19 Q. Do you cite anywhere in your declaration where the
20 patent describes an example of that encryption
21 operation?
22 ATTORNEY LOWENSTEIN: Objection, scope.
23 A. I don't recall looking for an example of that in
24 the patent when I wrote my declaration.

1 BY ATTORNEY NIEBERG:
2 Q. Okay. Let's turn to column 80 of the '854 patent.
3 A. I'm there.
4 Q. Okay. Well, hold on. Let's -- well, we could --
5 technically, we'll start at the bottom of 79
6 because your first citation was 79/66 to 81,
7 correct?
8 A. Okay.
9 Q. All right. It says the --
10 A. I'm sorry. What paragraph in my declaration are
11 you referring to?
12 Q. Paragraph 42 of your '854 declaration.
13 A. Let me go back there because I have been searching.
14 Q. Are you there?
15 A. I'm there.
16 Q. So your first citation is to column 79, line 66.
17 Do you see that?
18 A. Yes.
19 Q. Okay. And you quote that. In your declaration,
20 you say, "The workgroup key concepts allows for
21 enhanced protection of information assets by
22 encrypting information stored within the keys --
23 sorry -- within the shares.
24 Do you see that in your declaration?

1 ATTORNEY LOWENSTEIN: Objection. That
2 misstates the --
3 ATTORNEY NIEBERG: Yeah, I'll say it
4 again.
5 BY ATTORNEY NIEBERG:
6 Q. So in paragraph 42 of your declaration, you quote
7 from the patent that allegedly says, "The workgroup
8 key concept allows for enhanced protection of
9 information assets by encrypting information stored
10 within the share."
11 Do you see that?
12 A. You misread it the same way you misread it the
13 first time, but...
14 Q. How did I misread it?
15 A. You didn't say "key."
16 Q. Are you reading from the patent or your
17 declaration?
18 A. I'm reading from the patent.
19 Q. Oh, okay. I'm reading from your declaration,
20 paragraph 42. That was one of my questions.
21 A. Oh, okay.
22 Q. Your paragraph 42 -- that's why I said allegedly
23 the patent says this.
24 You wrote in paragraph 42, "The

1 workgroup key concept allows for enhanced
2 protection or information assets by encrypting
3 information stored within the shares."
4 That's what you wrote.
5 A. I see. So that's another correction to make.
6 Q. Okay. All right. So it should say "encrypting key
7 information stored within the shares"; is that
8 right?
9 A. Yes.
10 Q. Okay. All right. So now you can go back to the
11 patent.
12 I'll read that in full from 79/66 to 81.
13 It says, "The workgroup key concept
14 allows for enhanced protection of information
15 assets by encrypting key information stored within
16 the shares."
17 Do you see that?
18 A. Yes.
19 ATTORNEY LOWENSTEIN: Objection, it
20 misstates the document.
21 ATTORNEY NIEBERG: I believe I read it
22 correctly, and even the realtime has it correct.
23 ATTORNEY LOWENSTEIN: I thought you -- I
24 thought you omitted a phrase, so...

1 BY ATTORNEY NIEBERG:
2 Q. So, Dr. Rubin, can you please read into the record
3 what column 79, line 66 to 81 says?
4 A. "The workgroup key concept allows for enhanced
5 protection of information assets by encrypting key
6 information stored within the shares."
7 Q. Okay. And then can you read the rest of that
8 paragraph through 80 -- of column 80, line 4?
9 A. "Once this operation is performed, even if all
10 required shares and external keys are discovered,
11 an attacker has no hope of recreating the
12 information without access to the workgroup key."
13 Q. Okay. And then column 80, line 5 begins to talk
14 about Figure 38; is that correct?
15 A. It does.
16 Q. Okay. And then column 80, line 10 says -- can you
17 read what column 80, line 10 through 17 says?
18 A. "The simplified process to split the data includes
19 encrypting the data using Encryption Key 3804. At
20 Encryption Stage 3802, portions of Encrypted Key
21 3804 may then be split and stored within Shares
22 3810 in correspondence with the present invention.
23 Portions of Split Encryption Key 3806 may also be
24 stored within Shares 3810. Using the split

1 encryption key, Data 3808 is then split and stored
2 in Shares 3810."
3 Q. Okay. So in that paragraph, there is a -- there is
4 data, right?
5 A. It mentions data.
6 Q. That is encrypted by Encryption Key 3804, right?
7 A. That's what it says.
8 Q. And that Encryption Key 3804 is split and stored
9 with Shares 3810, correct?
10 A. Within Shares 3810.
11 Q. Okay. And Shares 3810 comprise portions of the
12 Data 3808 that have been split by Split Encryption
13 Key 3806; is that right?
14 ATTORNEY LOWENSTEIN: Objection, form.
15 BY ATTORNEY NIEBERG:
16 Q. If you want to look at the Figure 38 as well, it
17 could help? Let me know -- are you getting the
18 figure open?
19 A. Yeah. I'm going back and forth between the figure
20 and the text.
21 Q. It might be helpful if you have the electronic
22 figure open on your screen, and then you could look
23 to --
24 A. Right. Would you mind giving me the electronic

1 patent?
2 Q. I apologize. Let's do that. I'm dropping into the
3 chat window now a copy of the '854 patent.
4 A. Okay.
5 Q. Can you go to Figure 38?
6 Tell me when you are there.
7 A. I'm there but I'm not seeing the usual thing I want
8 to click when I flip it.
9 Q. If you right-click, maybe you'll have the option to
10 rotate.
11 A. I'm on a Mac with PDF Expert. I have done this
12 many times. I can look at it sideways, but it's
13 not hard.
14 Q. You could reverse and have your paper copy to
15 Figure 38 and then electronic could be in column
16 80. You have in front of Figure 38 and column 80,
17 which is describing Figure 38, amongst other
18 things.
19 Is that correct? That's what you have
20 in front of you?
21 A. Yes.
22 Q. Okay. Did you review this column of the patent and
23 figures before submitting your declaration?
24 A. Yes, I reviewed the whole patent.

1 Q. Okay. And you understood the patent when you
2 reviewed it?
3 A. I did.
4 Q. Okay. And understood the figures?
5 A. I did.
6 Q. Okay. So if you look to Figure 38, there is a
7 Data 3808 in the top right?
8 A. Right.
9 Q. Okay. And then that gets split into Shares 3810.
10 Do you see that?
11 A. I see that.
12 Q. That's the -- that Row 3810, that's the bigger box
13 in the right of each share; is that right?
14 A. I'm sorry. Can you say that again?
15 Q. So the first shares in 3810, there is three
16 divisions, right, two narrow ones and then a wider
17 division?
18 A. I see that.
19 Q. Okay. On the wider division at the end, that's the
20 portion of the Data 3808, right? You can see the
21 arrow on 3808?
22 A. I can see the arrow. So there's an arrow from the
23 3808 box labeled data down to the bigger part of
24 the bottom left box where it says shares.

1 Q. All right. That is a share of the Data 3808?
2 ATTORNEY NIEBERG: Stephen -- or
3 Mr. Elliot, you are unmuted, I think, and we hear
4 you. Thank you.
5 So 38 -- withdraw that last question.
6 BY ATTORNEY NIEBERG:
7 Q. Data 3808 is split into four pieces here, right?
8 A. That is what it's showing.
9 Q. Okay. And the way it's split is based on key --
10 Data Split Key 3806; is that correct?
11 ATTORNEY LOWENSTEIN: Objection, form.
12 BY ATTORNEY NIEBERG:
13 Q. If you --
14 ATTORNEY LOWENSTEIN: Also object to
15 scope.
16 A. I don't -- were you going to make a clarification?
17 BY ATTORNEY NIEBERG:
18 Q. Well, let's see. If you have column 8 open --
19 column 80. Excuse me.
20 A. Yes.
21 Q. What is Split Encryption Key 3806 used for?
22 ATTORNEY LOWENSTEIN: Objection, scope.
23 A. I haven't analyzed this to determine that.
24 BY ATTORNEY NIEBERG:

1 Q. Well, let's see. So column 80 says that on line
2 15, "Portions of Split Encryption Key 3806 may also
3 be stored within Shares 3810."
4 Do you see that?
5 A. I see that.
6 Q. If you look to Figure 38, you can see that Data
7 Split Key 3806 is also split up into the shares.
8 Do you see that?
9 A. The oval that says "data split key," there is an
10 arrow to one of the narrow boxes where it says
11 share.
12 Q. Okay. Likewise, that encryption key, 3804, is
13 split up into the four shares, correct?
14 A. Yes. Here it shows the smaller rectangle and the
15 shares coming from the oval that says encryption
16 key.
17 Q. If you go to column 80, line 10, it says, "The
18 simplified process to split the data includes
19 encrypting the data using Encryption Key 3804 at
20 Encryption Stage 3802."
21 Do you see that?
22 A. I see that.
23 Q. So Encryption Key 3804 is the encryption key
24 applied to Data 3808; is that correct?

1 A. I don't see that it says that. I didn't analyze
2 this for that.
3 Q. You don't see where in column 80, line 10, it says,
4 "The simplified process to split the data includes
5 encrypting the data using Encryption Key 3804 at
6 Encryption Stage 3802"?
7 A. I see that. I don't think that's what you asked
8 me.
9 Q. Is Data 3808 being encrypted with Encryption Key
10 3804?
11 A. I think so. It doesn't say 3808, and I haven't
12 looked at this carefully enough.
13 Q. When you review column 80, you have cited portions
14 of it, but you have skipped over column 11 -- lines
15 11 through 17?
16 ATTORNEY LOWENSTEIN: Objection, form.
17 A. No, I'm not saying I skipped them, obviously. I'm
18 saying that I didn't perform the analysis you are
19 asking me to perform because that's not something
20 that I addressed in my report.
21 BY ATTORNEY NIEBERG:
22 Q. Well, let's -- you did address Figure 39, did you
23 not?
24 A. Yes.

1 Q. Let's look at Figure 39.
2 A. Okay.
3 Q. What is workgroup key encrypting?
4 A. So in paragraph 80, the second sentence in line 33,
5 in that paragraph says, "The encryption key may
6 then be encrypted with the workgroup key at Stage
7 3904."
8 Q. And which encryption key is being encrypted at
9 Stage 3904 by the workgroup key?
10 A. The encryption key that encrypted the data.
11 Q. Does Figure 39 for column 80 show the workgroup key
12 encrypting anything else?
13 A. I don't see that this embodiment describes it doing
14 something else, but if it's there, the document
15 speaks for itself.
16 Q. Does Figure 39 from column 80 disclose encrypting
17 the shares with any key?
18 A. I don't see that described with respect to Figure
19 39, but the document speaks for itself.
20 Q. So the shares in Figure 39 are unencrypted shares;
21 is that right?
22 A. The shares in Figure 39 contain some encrypted
23 information, but Figure 39 does not show that those
24 shares are then encrypted.

1 Q. Does Figure 39 further secure the shares in any
2 way?
3 ATTORNEY LOWENSTEIN: Objection, form.
4 A. Further from what?
5 BY ATTORNEY NIEBERG:
6 Q. Is it further secured in any way after what is
7 shown in Figure 39?
8 ATTORNEY LOWENSTEIN: Objection, form.
9 A. So you are asking me if Figure 39 is showing
10 something that happens after what happens in Figure
11 39?
12 BY ATTORNEY NIEBERG:
13 Q. Well, let me ask it this way -- so let's go to
14 your -- I'll withdraw the question.
15 So you wrote in paragraph 42 of your
16 '854 declaration --
17 A. Okay.
18 Q. At the very bottom, you wrote, "Thus, the '854
19 introduces an 'external key, i.e., the workgroup
20 key' used in an encryption operation to further
21 secure data, and teaches the benefit of this
22 approach."
23 Do you see that?
24 A. Right.

1 Q. Okay. How is data further secured by the workgroup
2 key in Figure 39?
3 A. The workgroup key is just an example of an external
4 key.
5 Q. All right. But I'm asking you to explain your
6 statement at the bottom of paragraph 42 that the
7 workgroup key is used in an encryption operation to
8 further secure data. And I want to understand.
9 How does the workgroup key further
10 secure data?
11 A. So if you're looking at column 49 at the bottom,
12 the section that we read, it says, "The workgroup
13 key concept allows for enhanced protection of
14 information assets by encrypting key information
15 stored within the shares. Once this operation is
16 performed, even if all required shares and external
17 keys are discovered, the attacker has no hope of
18 recreating the information without access to the
19 workgroup key."
20 So the workgroup key is encrypting key
21 information within the shares.
22 Q. Well, if you talk about the workgroup key is
23 encrypting the encryption key -- we talked about
24 before the workgroup key is encrypting the

1 encryption key that encrypts the data, right?
2 A. Right.
3 Q. That's how it's further securing the data, by
4 encrypting the key that encrypted the data?
5 A. Are you referring to the further security --
6 securing of the claims?
7 Q. No. I'm referring to your paragraph 42, and you
8 wrote that the external key, the example of which
9 you cited the workgroup key, is used in an
10 encryption operation to further secure data.
11 A. Right.
12 Q. I want to understand how the workgroup key is used
13 to further secure data. And we talked about that
14 all the workgroup key does is encrypt the key that
15 was used to encrypt the data; is that right?
16 A. That provides additional security, which is further
17 security.
18 Q. All right. So the further security is by
19 encrypting the key that was used to encrypt the
20 data?
21 A. In this context of the section, that's a true
22 statement.
23 Q. Okay. Does that encryption of the key that
24 encrypted the data further secure the shares?

1 A. All of the information, whether it's pre-split or
2 post-split is encrypted -- is protected more and is
3 further secured by having this step.
4 ATTORNEY LOWENSTEIN: Greg, just a
5 heads-up. We're coming on 5 --
6 ATTORNEY NIEBERG: Yeah, okay. No, I
7 think we can take a break now. I might have a
8 couple follow-up.
9 But how long a break would you like,
10 Dr. Rubin?
11 THE WITNESS: I'm good with a half hour
12 if that's enough time for you to get lunch.
13 ATTORNEY NIEBERG: Yes, that's fine with
14 me. I'm home, so easy enough.
15 THE WITNESS: Yeah, the same.
16 (Off the record at 11:55 a.m.)
17 (Back on the record at 12:30 p.m.)
18 BY ATTORNEY NIEBERG:
19 Q. All right. Welcome back, Dr. Rubin.
20 A. Thank you.
21 Q. Did you speak to anyone about your testimony during
22 the break?
23 A. No.
24 Q. Okay. So before the break we were talking about

1 column 80 of the '854 patent, and I have a few more
2 follow-up questions there.
3 If you look to column 80, lines 24
4 through 29 --
5 A. Okay.
6 Q. Okay. And the -- well, the second sentence that
7 starts at line 26 says, "The encryption key may
8 then be encrypted with the workgroup key prior to
9 being stored within the shares."
10 Do you see that?
11 A. Yes.
12 Q. Okay. What is being stored within the shares --
13 well, let me ask a different question.
14 Is it the encryption key or the
15 workgroup key that is being stored within the
16 shares?
17 A. I'm just going to read some surrounding text first
18 in context.
19 It's the encryption key that is stored
20 within the shares after it's encrypted with the
21 workgroup key.
22 Q. Okay. Is any other key information of the
23 encryption key stored within the shares?
24 ATTORNEY LOWENSTEIN: Objection, form.

1 A. I'm not sure I follow the question.
2 BY ATTORNEY NIEBERG:
3 Q. Well, the encryption key, as you said, was
4 encrypted with the workgroup key, and then that
5 encrypted workgroup key is stored within the
6 shares, correct?
7 A. That's what's being described here.
8 Q. Okay. Does column 80 describe any other
9 information about the encryption key being stored
10 within the shares?
11 A. Anywhere in column 80?
12 Q. Correct.
13 A. I don't see where in column 80 that it discusses
14 other things being stored there.
15 Q. Would a person of skill understand that other key
16 information would have to be stored there within
17 the shares?
18 A. For the purposes of this declaration, I haven't
19 considered that.
20 Q. Do you have an opinion on that?
21 A. No.
22 Q. Okay. So before the break, you said that by
23 encrypting the encryption key with the workgroup
24 key, you have further secured the data, whether

1 it's pre- or post-splitting; is that correct?
2 A. Yeah, I want to clarify that.
3 I'm using "further secured" here in a
4 general context that if something is encrypted with
5 another key, then it's further secured.
6 Q. Okay. And you said that the data that's being
7 further secured is data -- the data shown in
8 Figure 38 -- I'm sorry. Strike that.
9 So the data being further secured in
10 Figure 39 is the data in the top right; is that
11 right?
12 A. So we were in paragraph 42 of my declaration?
13 Q. Yes.
14 A. That's the data, yes.
15 Q. Okay. But is it or is it not further securing the
16 data shares by encrypting the encryption key with
17 the workgroup key?
18 A. Indirectly. The data shares are -- consist of the
19 data with some encryption and then splitting
20 applied to it. So that data is further secured.
21 Q. Okay. "That data" being the share of data?
22 A. If you look at what I wrote in my declaration, I
23 said "to further secure data."
24 So that's just talking about further

1 securing the data in that sense.
2 Q. Right. And I'm asking is that your opinion that it
3 only further secures the data before splitting, or
4 does it also further secure the data after it has
5 been split into shares?
6 A. For the purposes of this section, I didn't consider
7 that question.
8 Q. So you don't have an opinion whether the shares
9 have been further secured by encrypting of the
10 workgroup key?
11 A. So for the purpose of this paragraph, where I'm
12 discussing in the last sentence, "Thus the '854
13 introduces an 'external key' (i.e., the workgroup
14 key) used in an encryption operation to further
15 secure the data."
16 In this particular section, with
17 reference to Figure 39, I'm not offering an opinion
18 about whether it's securing it before or after it
19 turns into shares.
20 Q. Okay. Do you cite anywhere where the patent
21 describes further securing shares with a workgroup
22 key?
23 A. Can you please repeat the question?
24 Q. Do you cite anywhere where the '854 patent

1 describes further securing shares with the
2 workgroup key?
3 A. I don't see anywhere in my declaration that I
4 described the workgroup key that way, other than
5 what we discussed already in paragraph 42, but the
6 document speaks for itself.
7 Q. You cited in your declaration, paragraph 42,
8 portions of the '854 patent from column 79, line 66
9 through column 80, line 33, right?
10 A. Yes.
11 Q. Okay. Can you read that section of the patent --
12 that portion of the patent? And can you tell me if
13 that discloses using the workgroup key to further
14 secure shares?
15 A. Column 80/33 through 33?
16 Q. Column 79, line 66 through column 80, line 33 and
17 Figure 39.
18 A. I'm sorry. What was the second one?
19 Q. Your citations in paragraph 42 are column 79,
20 line 66 through column 80, line 33 and Figure 39.
21 A. I'm not seeing that is exactly right. I see 79, 66
22 through 81, and then 81 through 4, and 80, 33
23 through 33.
24 Q. All right. If you want to just read those lines,

1 you are more than welcome to. I'm saying it might
2 be -- make more sense to read continuously from
3 column 79, line 66 through column 80, line 33.
4 A. Okay.
5 Q. Just to repeat, the question is: Does any of that
6 disclosure teach further securing shares with the
7 workgroup key?
8 A. I'll put the figure back on my screen like before.
9 Q. And which figure are you referring to?
10 A. 38.
11 Q. Where are you?
12 A. That's referenced in column 80, line 5.
13 Q. Okay. And just to be clear --
14 A. Sideways.
15 Q. The workgroup key is only shown in Figure 39; is
16 that correct?
17 A. That's right.
18 Q. Okay. So let's just start again.
19 So from column 79, line 66 through
20 column 80/33 -- and you can look to Figures 38 and
21 39 if you like.
22 The question is: Does that portion of
23 the patent disclose further securing the shares
24 with the workgroup key?

1 A. It does say that there can be a post-encrypt step
2 that's omitted from the figure, and that can be
3 included in other embodiments.
4 Q. Where are you looking at?
5 A. Column 80, line 7 and 8.
6 Q. Okay. And does that say that it's using the
7 workgroup key?
8 A. This paragraph doesn't mention the workgroup key,
9 but it follows the paragraph where it describes the
10 workgroup key concept.
11 Q. So is it your opinion when it says it can
12 optionally post-encrypt with something, it's the
13 workgroup key that it's post-encrypting with?
14 A. I would have to analyze. I didn't offer that
15 opinion in my declaration.
16 Q. Right. So that's why I'm -- so I'm asking you:
17 Where is there any disclosure in what you've cited
18 of using the workgroup key to further secure
19 shares?
20 A. I think so. If you look in column 79, line 15,
21 where it describes a post-encryption key.
22 It says, "When post-encryption of the
23 shares is selected, an external key may be passed
24 to the secure data parser and used to post-encrypt

1 the individual shares. This key may be generated
2 and stored externally in a key store or other
3 suitable location. "
4 And then at the end of this column, it
5 talks about the workgroup key, which is an external
6 key. And so when in the next sentence it talks
7 about the post-encryption, that is referring, to me
8 it seems, to the workgroup key.
9 Q. Okay. The workgroup key that we talked about
10 before is split into the shares, correct?
11 Look to Figure 39 -- I take that back.
12 The encrypted encryption key is split
13 into the shares; is that right?
14 A. That's right.
15 Q. Okay. And that encrypted encryption key was
16 encrypted with the workgroup key, correct?
17 A. Yes.
18 Q. And so your opinion is you would then encrypt the
19 shares again with the workgroup key?
20 A. I think that's what's disclosed here in columns 79
21 and 80.
22 Q. Okay. So using the same key twice is further
23 securing the shares?
24 ATTORNEY LOWENSTEIN: Objection, scope,

1 form.
2 A. I'm not sure I understand that question.
3 BY ATTORNEY NIEBERG:
4 Q. Well, it first secures -- the workgroup key secures
5 data by encrypting the encryption key that encrypts
6 the data, correct?
7 A. Yes.
8 Q. Okay. And now you're saying you would use that
9 workgroup key again to encrypt the shares, which
10 have portions of the encrypted data --
11 ATTORNEY LOWENSTEIN: Objection.
12 BY ATTORNEY NIEBERG:
13 Q. -- right?
14 ATTORNEY LOWENSTEIN: Objection, form.
15 A. So I'm saying that this document, this column that
16 we're looking at disclose the possibility of doing
17 a post-encrypt so that -- that could mean using the
18 workgroup key, which is an external key that was
19 just described.
20 BY ATTORNEY NIEBERG:
21 Q. Would the workgroup key be used to encrypt the data
22 and then used again to encrypt the shares?
23 ATTORNEY LOWENSTEIN: Objection, form.
24 A. I don't think the workgroup key ever directly

1 encrypts the data.
2 BY ATTORNEY NIEBERG:
3 Q. Didn't you just tell me it would be a
4 post-encryption step with the workgroup key?
5 A. Of the shares.
6 Q. With the workgroup key?
7 A. That could be what is -- it's described as an
8 optional embodiment to do a post-encrypt with an
9 external key.
10 Q. An additional step, correct?
11 A. I'm not sure what you mean by "additional" --
12 Q. Well, I just want -- so Figure 39 encrypts the
13 encryption key with the workgroup key, correct?
14 A. That's what is shown there, yes.
15 Q. Okay. Now, if we include this post-encrypt option
16 with the workgroup key --
17 A. Okay. I think you're combining Figures 38 and 39
18 in a way that the patent didn't.
19 Q. So you're saying the post-encryption option only
20 applies to Figure 38?
21 ATTORNEY LOWENSTEIN: Objection, form.
22 A. I am just saying that where it describes Figure 38,
23 it talks about an optional pre-encrypt and
24 post-encrypt step.

1 I haven't looked to see whether that is
2 also described with respect to Figure 39.
3 BY ATTORNEY NIEBERG:
4 Q. Is it your opinion that the workgroup key could be
5 used in the post-encryption step?
6 A. I haven't formed an opinion on that.
7 Q. Then let's go back to my original question. Where
8 does the patent describe using the workgroup key to
9 further secure shares?
10 A. Those words in that order, I don't see in the
11 patent. What I see is a description of a
12 post-encryption key, which is an external key, and
13 a workgroup key, which an external key, and an
14 optional step described where in one embodiment
15 there can be a post-encryption step with shares.
16 Q. And that post-encryption step is with respect to
17 Figure 38, correct?
18 ATTORNEY LOWENSTEIN: Objection, form.
19 A. In the area where Figure 38 is described, it
20 mentions the post-encryption step.
21 BY ATTORNEY NIEBERG:
22 Q. Does it mention using post-encryption step with
23 respect to Figure 39?
24 ATTORNEY LOWENSTEIN: Objection, form.

1 A. In the text in column 80 where it describes
2 pre-encrypt and post-encrypt, it says, "These steps
3 may be included in other embodiments."
4 It leaves it open, but it doesn't
5 explicitly in the paragraph describe in paragraph
6 39. Say it again.
7 BY ATTORNEY NIEBERG:
8 Q. Okay. How would the workgroup key be used to
9 further secure the shares?
10 ATTORNEY LOWENSTEIN: Objection, form.
11 A. I just haven't studied that.
12 BY ATTORNEY NIEBERG:
13 Q. So why is the workgroup key relevant to your
14 opinions?
15 A. It's an example of an external key.
16 Q. Is that it? Is there any other relevance of the
17 workgroup key?
18 A. In paragraph 67.
19 Q. Okay. Of your '854 declaration?
20 A. Yes.
21 Q. Okay. Anywhere else?
22 A. I don't see anywhere else other than paragraph 67
23 in addition to what we already discussed earlier.
24 Q. Okay. Well, we'll talk about both of those

1 paragraphs. Let's go back to paragraph 42.
2 Can you read into the record your first
3 sentence in paragraph 42 of your '854 declaration?
4 A. "The '854 teaches further securing the share keys
5 with an encryption operation with a workgroup key
6 explaining that the workgroup key concept allows
7 for enhanced protection of information, assets, by
8 encrypting information stored within the shares."
9 Q. And you cite '854 column 7966 through column 81,
10 right?
11 A. Yes.
12 Q. Okay. So it's your opinion that the workgroup key
13 further secures the share keys with an encryption
14 operation, correct?
15 A. Are you reading what we just read or somewhere
16 else?
17 Q. Well, I'm -- your opinion is that the '854 teaches
18 further securing share keys with an encryption
19 operation with a workgroup key?
20 Do you see that?
21 A. Yes.
22 Q. What share keys are you referring to in column 79,
23 lines 66 through 80, 1?
24 A. Can you say that again?

1 Q. Yeah.
2 So you cite '854, column 79, line 66,
3 through column 80, line 1?
4 A. Right.
5 Q. Your statement is that the '854 teaches further
6 securing the share keys with an encryption
7 operation, "with a workgroup key," explaining that
8 the, "workgroup key concept allows for enhanced
9 protection of information, assets, by encrypting."
10 You left out keys -- it says, "Key information
11 stored within shares."
12 My first question is: What share keys
13 are discussed in column 79, line 66 through 80, 1?
14 A. So we're talking in this patent about splitting
15 data into shares and -- splitting encrypted data
16 into shares and then encrypting those shares. Here
17 it's talking about a workgroup key that is going to
18 provide further protection of those shares.
19 Q. So your opinion, when it says "the workgroup key
20 concept allows for enhanced protection assets by
21 encrypting key information stored within the
22 shares" that is referring to encrypting the share
23 keys?
24 A. Encrypting the shares and the share keys that are

1 in the shares are thus protected.
2 Q. What share keys are in the shares?
3 A. The ones that were used in the earlier step where
4 the -- there's a master secret that is used to
5 input the data, and that is broken up into shares
6 and then those are then encrypted.
7 And they're put together with the
8 encrypted data. So that is then protected by the
9 workgroup key.
10 Q. What's that that you're referring to?
11 A. The shares with the key information -- what you had
12 called the Share 1 thing that has the key material
13 and the data material that has been encrypted.
14 Q. So you're referring to Figure 21, for example?
15 A. No. Well, Figure 21 does show some parts of this.
16 So if we want to say Encrypted Share 2, Encrypted
17 Share N, those things, and then Key 1, Key N,
18 et cetera.
19 So in order to provide additional
20 security, that gets encrypted with the group key.
21 Q. What's that that gets encrypted with the workgroup
22 key?
23 A. The key information. It could be the Encrypted
24 Share 1 with the Key N together.

1 Q. Okay. First part, that's not disclosed in column
2 79, line 66 through column 80, line 33, correct?
3 A. I disagree with that.
4 Q. Why do you disagree?
5 A. It says, "Allows for enhanced protection of
6 information as it by encrypting key information
7 shored within the shares."
8 So if you're going to have a workgroup
9 key and you are going to want to protect key
10 information within the shares, then the way that a
11 POSITA would do that would be to encrypt it with
12 that workgroup key.
13 Q. Didn't we just discuss the way it protects key
14 information stored in the shares is by encrypting
15 that first encryption key?
16 A. If you wanted to further protect it, for example,
17 because that -- maybe that first encryption key
18 isn't as trusted or it could be exposed or found
19 out, so then the group key -- it describes the
20 purpose of the group key in the paragraph above in
21 column 79 where a group of people want to further
22 protect certain members of the group can only
23 access something.
24 Q. Where does it say that the first encryption key

1 is -- may not be trusted?
2 A. The example that it gives them in column 79 is more
3 that it wants to limit access to something to
4 members of a particular group.
5 Q. And the way it does that is by encrypting the
6 encryption key that encrypts the original data set,
7 correct?
8 A. Well, it talks here about enhanced protection and
9 encrypting key information stored within the
10 shares. So I think that discloses that it encrypts
11 the shares with the group key.
12 Q. Okay. By encrypting the shares with the group key,
13 you have further secured the shares?
14 A. You have further secured the data, yeah.
15 Q. So you further secured the data -- by encrypting
16 the shares with the workgroup key, you have further
17 secured the data; is that your opinion?
18 A. Yes.
19 Q. Okay. But column 80 says you also use the
20 workgroup key to encrypt that first encryption key,
21 correct?
22 A. That's one embodiment described there.
23 Q. Well, I'm trying to understand what your embodiment
24 is, which I don't see in the patent. Is it

1 encrypting the key with the workgroup key and then
2 using the workgroup key again to encrypt the
3 shares?
4 A. I don't have an embodiment. I'm just describing
5 what is being disclosed here. Before it gives
6 several embodiments, it says that, "The workgroup
7 key concept is used to provide further protection
8 for members of a group and by encrypting the
9 information stored within the shares." Then it
10 goes on to describe several different embodiments.
11 Q. Well, with the workgroup key, how many embodiments
12 are disclosed?
13 A. I don't know.
14 Q. One embodiment that is disclosed is encrypting the
15 encryption key with the workgroup key, correct?
16 A. Yes.
17 Q. Okay. And that encryption key is the encryption
18 key that encrypts the data set before splitting,
19 correct?
20 A. Yes.
21 Q. Okay. Is it your opinion, then, that the patent is
22 teaching there is an embodiment that uses that
23 workgroup key again to encrypt the shares?
24 A. Not necessarily.

1 Q. So is it your opinion that the patent -- what
2 embodiment do you think meets these claims that is
3 disclosed in this patent as one embodiment?
4 ATTORNEY LOWENSTEIN: Objection.
5 A. Sorry. That is not something that I offered an
6 opinion on. I may in later stages of the
7 litigation study that and offer opinions on that.
8 BY ATTORNEY NIEBERG:
9 Q. So, sitting here today, you have no opinion about
10 whether there are any embodiments that actually
11 disclose the claim; is that your opinion?
12 ATTORNEY LOWENSTEIN: Objection, scope,
13 form. Objection, scope, form.
14 A. That was not my assignment. That is not something
15 that I've looked at yet. I don't have any opinions
16 about that in my declaration.
17 Q. Is it your opinion that the patent discloses
18 further securing the shares by encrypting the
19 shares with the workgroup key?
20 A. I think that to the POSITA reading this
21 specification, it does disclose that.
22 Q. Where does it disclose that?
23 A. In the sections I cited where I talk about the
24 workgroup key concept for enhanced protection of

1 information assets by encrypting key information
2 stored within the shares. And so -- then it talks
3 about an optional post-encryption step.
4 So a POSITA could read that, and would
5 read that and understand that that is something
6 that's disclosed here.
7 Q. But it also has to further read into it that you
8 would encrypt each of the shares with their own
9 keys; is that correct?
10 ATTORNEY LOWENSTEIN: Objection, form.
11 A. I don't see that. It would just -- the POSITA
12 would understand that you could encrypt the shares
13 with the workgroup key.
14 BY ATTORNEY NIEBERG:
15 Q. But in order to encrypt the shares with their own
16 keys, you'd have to read other embodiments of the
17 patents to add that in, right?
18 ATTORNEY LOWENSTEIN: Objection, form.
19 A. I'm not sure what you mean.
20 BY ATTORNEY NIEBERG:
21 Q. Well, as we discussed, in column 79, 66, through
22 80, 33, it doesn't talk about encrypting shares
23 with share keys?
24 A. When you say "encrypting shares with share keys,"

1 are you referring to, for example, what was in
2 Figure 21 where each share gets encrypted by a
3 share key?
4 Q. I'm asking you -- the patent claim requires, as you
5 said, you split the data into shares, right, and
6 then you encrypt each of those shares with their
7 own keys, right?
8 A. That's true.
9 Q. Okay. Where does the patent describe doing that
10 plus using a workgroup key?
11 A. For the first part is described, among other
12 places, in Figure 21, and the second part is
13 disclosed in the sections we have been looking at
14 in columns 79 and 80.
15 Q. Okay. You take the embodiment that is in Figure 21
16 and you combine it with the embodiment discussed in
17 column 80; is that what your opinion is?
18 ATTORNEY LOWENSTEIN: Objection, form.
19 A. I'm not saying you are combining embodiments. I'm
20 saying the patent is teaching to one of skill in
21 the art the encryption of shares with a share key
22 as well as the post-encryption with a workgroup
23 key.
24 BY ATTORNEY NIEBERG:

1 Q. And those together form one embodiment?
2 ATTORNEY LOWENSTEIN: Objection, form.
3 A. I haven't looked at that question.
4 BY ATTORNEY NIEBERG:
5 Q. Okay. So we're going to change topics a little
6 bit.
7 So these patents for -- have a priority
8 date of around 2004-2005; is that correct?
9 A. (No response.)
10 Q. Well, let me see if maybe we can make it a little
11 easier.
12 Do you have a -- there's a definition of
13 "person of ordinary skill" that Dr. Bhattacharjee
14 posed in this -- in the '854. If you go to your --
15 A. So still in the '854 declaration?
16 Q. Yeah, '854. In your declaration, paragraph 17, you
17 write that the time of the invention is
18 November 18, 2005.
19 A. Yes.
20 Q. And that's the same time of the invention for the
21 '609 patent?
22 A. Let me see my '609. Well, there, it looks like
23 October 25, 2004.
24 Q. Are you looking at the -- maybe I'm -- is that the

1 '609 or the '116?
2 A. Oh, I'm sorry. I'm in the '116.
3 Q. Yep. So the time of the invention of the '116 is
4 October 25, 2004. For the '854, it's November 18,
5 2005. And '609 is, according to your
6 declaration --
7 A. I'm still looking for that.
8 Q. And it's in paragraph 17 of your '609 declaration.
9 A. Thanks.
10 Q. And the effective file date you wrote, like the
11 '854, is November 18, 2005?
12 ATTORNEY LOWENSTEIN: Objection, form
13 and foundation.
14 A. I do say November 18, 2005.
15 BY ATTORNEY NIEBERG:
16 Q. Okay. And so if I talk about the -- like the time
17 of filing and the time of the invention, you do
18 understand that I'm referring to, like, the
19 2004-2005 time frame?
20 A. Yes.
21 Q. Okay. And when -- if we talk about it and if I ask
22 questions about the knowledge of a person of skill,
23 your understanding is that it's about their
24 knowledge as of the time of filing of -- effective

1 filing dates of these patents; is that correct?
2 A. Yes.
3 Q. So around the 2004-2005 time frame; is that right?
4 A. Yes.
5 Q. Okay. So your declarations in these matters cited
6 several additional exhibits that weren't cited in
7 the petition; is that correct?
8 A. It's possible.
9 Q. Well, are you aware that you cited exhibits that
10 were not cited in the petitions?
11 A. I can't list them off the top of my head, but I
12 believe that happened.
13 Q. And generally you're aware that the exhibits
14 submitted by the patent owner begin with the number
15 2; is that right?
16 A. I don't think I was aware of that.
17 Q. Okay. So I sent you hard copies of some exhibits
18 you cited. If you need more, I could provide them,
19 but if you have that folder, you'll see, like, an
20 example, like Exhibit 2014 is "Overview of MPEG
21 System."
22 Do you see that, like, on the cover?
23 A. Yes.
24 Q. Yeah. So, I mean, I'll represent that in the IPRs,

1 exhibits submitted by the petitioner start with
2 number 1 and exhibits submitted by the patent owner
3 start with number 2.
4 ATTORNEY LOWENSTEIN: No objection.
5 ATTORNEY NIEBERG: So was that "no
6 objection"?
7 ATTORNEY LOWENSTEIN: No objection.
8 ATTORNEY NIEBERG: Okay. I just
9 wanted --
10 THE WITNESS: I learned something new
11 today.
12 ATTORNEY NIEBERG: Okay. Good. Yeah.
13 So that -- it makes it easier to figure out whose
14 exhibit it is, hopefully, or at least who put it
15 into the record.
16 BY ATTORNEY NIEBERG:
17 Q. So you cited a bunch of these exhibits that SFI put
18 into the record, correct?
19 A. Yes.
20 Q. Okay. Some of these exhibits were published or
21 they look to have a date after 2004-2005; is that
22 correct?
23 A. I would have to look.
24 Q. Let's see. Well, okay. So this -- yeah, 2004 --

1 Exhibit 2014, Overview of the MPEG System, is
2 tab 14 in the binder I sent you.
3 A. Right.
4 Q. Okay. And then let me know when you have it open.
5 A. Yeah, I've got that.
6 Q. Okay. And then it says "Article," and it has a
7 date of July 27, 2023.
8 Do you see that?
9 A. Yes.
10 Q. That's pretty recent, right?
11 A. That's about a little over a year ago.
12 Q. Okay. I'm curious. Why is an article from 2023
13 relevant to a person of skill's understanding of
14 the art in the 2004-2005 time frame?
15 A. I would have to look at the specific citation and
16 the context that I looked at it in.
17 Q. Did you -- okay. Well, let's do that, then. Let's
18 see. I'll find an example of where you cited 2014
19 in your '854 declaration.
20 ATTORNEY LOWENSTEIN: If it helps,
21 there's 150.
22 ATTORNEY NIEBERG: Thank you.
23 I'm sorry. It was 1 --
24 ATTORNEY LOWENSTEIN: -- 50.

1 BY ATTORNEY NIEBERG:
2 Q. Okay. So in paragraph 150 of your '854
3 declaration, you cite Exhibit 2014.
4 Do you see that?
5 A. Hold on. I'm getting there. Yes.
6 Q. Okay. And you cited -- you quoted where it says,
7 "An elementary stream is broken up into packets,
8 forming a packetized elementary stream (PES)."
9 Do you see that?
10 A. No. Sorry. We're in paragraph 150?
11 Q. Yes.
12 A. And how many lines are you starting?
13 Q. The third line, you have a cite to Exhibit 2014.
14 A. Right.
15 Q. And then you quote a portion of it.
16 A. Right.
17 Q. So my question is: Why is an article from 2023
18 relevant -- strike that.
19 Why is an article from 2023 informative
20 of what a person of skill in the art understood in
21 2004-2005?
22 A. So, for one, the MPEG standard that the -- that
23 streams are broken into packets has not changed
24 since MPEG was created, so that would still be the

1 same.
2 Q. Okay. Did you review all of 20 -- Exhibit 2014?
3 A. I probably did. It's just two and a half pages.
4 Q. Okay. And did you identify anything in there that
5 you felt was incorrect?
6 A. I don't recall seeing anything that was incorrect.
7 Q. Okay. And did you identify anything in your
8 declaration about being incorrect in Exhibit 2014?
9 A. I don't recall identifying that there was something
10 incorrect in this exhibit.
11 Q. Did you identify anything in Exhibit 2014 that
12 would be inconsistent with a person of skill's
13 understanding in the 2004-2005 time frame?
14 A. No.
15 Q. Okay. The same thing. Let's -- if you look to the
16 binder that I sent you --
17 A. Okay.
18 Q. -- it has a description of it. It shows from tab
19 13 through 26, there are several exhibits here that
20 start with the number 2, right?
21 A. Okay.
22 Q. Okay. And these are exhibits that you variously
23 cited in at least one of your declarations; is that
24 right?

1 A. I'll take your word for it.
2 Q. Okay. And did you review all of these exhibits
3 before you submitted your declaration?
4 A. I did.
5 Q. Did you identify anything that you thought was
6 inconsistent with a person of skill's knowledge in
7 the 2004-2005 time frame?
8 A. No.
9 Q. Are they consistent with a person of skill's
10 understanding as of 2004-2005?
11 A. I mean, I'd have to look at the specific thing I
12 cited it for.
13 ATTORNEY LOWENSTEIN: I was -- I was
14 muted.
15 Objection, scope.
16 A. So, I mean, for example, one of them was a
17 dictionary. I didn't review every single entry in
18 the dictionary.
19 But to the extent that I used these
20 references, the purpose that I use them for would
21 have been consistent with a POSITA's understanding
22 at the time of the inventions.
23 BY ATTORNEY NIEBERG:
24 Q. Like, for example, some of these references talk

1 about the MPEG standard. And even if it's an
2 exhibit that was published after 2005, it would be
3 consistent with a person of skill's understanding
4 before 2005?
5 ATTORNEY LOWENSTEIN: Objection, form,
6 scope.
7 A. Again, I'm limiting this to the purpose that I used
8 the reference for and the part of the reference
9 that I cite and that I use, but, yes.
10 BY ATTORNEY NIEBERG:
11 Q. Okay. But other portions, if you didn't cite it,
12 you don't have an opinion about whether they're
13 consistent or not with a person of skill's
14 understanding before 2004-2005?
15 A. I am not offering any opinions about sections of
16 these documents that I didn't rely on.
17 Q. Okay. But you did not identify anything in them
18 that you thought was inconsistent; is that correct?
19 A. As I sit here, I don't recall identifying any such
20 thing. But if it's in my declaration, then the
21 declaration speaks for itself.
22 Q. Okay. So you mentioned that the MPEG standards
23 existed before 2005; is that correct?
24 A. I believe that's the case.

1 Q. All right. Would a person of skill in the art have
2 been familiar with the MPEG standard at the time of
3 SFI's inventions?
4 ATTORNEY LOWENSTEIN: Objection, scope.
5 A. I think a person of skill in the art at the time of
6 the inventions would have known that the MPEG
7 system is -- streams packets of video information.
8 BY ATTORNEY NIEBERG:
9 Q. Is that all a person of skill in the art would have
10 been aware of from the MPEG standard?
11 ATTORNEY ELLIOTT: Objection, scope.
12 A. I have not done an analysis of how much of the MPEG
13 standard one of ordinary skill in the art would
14 have known at the time of the invention.
15 BY ATTORNEY NIEBERG:
16 Q. Okay. What is the MPEG standard?
17 A. It's a standard for encoding video.
18 Q. And is video data?
19 A. Yes.
20 Q. Would an example be like a movie?
21 ATTORNEY LOWENSTEIN: Objection, form.
22 BY ATTORNEY NIEBERG:
23 Q. Well, strike that.
24 Would an example of data encoded by the

1 MPEG standard be a movie file?
2 ATTORNEY LOWENSTEIN: Objection to form.
3 A. A movie file is something that can be encoded in
4 MPEG.
5 ATTORNEY NIEBERG: Okay. We've been
6 going about an hour. Do you want to take a break,
7 or do you want to keep going?
8 THE WITNESS: I'll go a little while
9 longer.
10 ATTORNEY NIEBERG: Okay. Is that okay
11 with you, Counsel? Okay.
12 BY ATTORNEY NIEBERG:
13 Q. The MPEG standard discloses something called a
14 program stream, correct?
15 ATTORNEY LOWENSTEIN: Objection, form,
16 scope.
17 A. It does.
18 BY ATTORNEY NIEBERG:
19 Q. And does it also describe something called a
20 transport stream?
21 A. Yes.
22 Q. Are those different ways of encoding MPEG data?
23 A. Yes.
24 Q. Okay. Does your declaration discuss anywhere the

1 distinctions between the program stream and the
2 transport stream?
3 I'm talking about -- we'll start with
4 your '854 declaration.
5 A. Sure. I don't see that, but if it's in my
6 declaration, then it speaks for itself.
7 Q. Okay. Do you recall discussing the distinctions
8 between a program stream and transport stream for
9 your declarations?
10 A. I don't recall doing that, but whatever is in the
11 declaration is there.
12 Q. Okay. Another one of the exhibits you cite is
13 Exhibit 2039. It's tab 22.
14 Do you see that?
15 A. Yes.
16 Q. And this is a Marlin-DRM FAQ, F-A-Q?
17 A. That's right.
18 Q. And the last page of Exhibit 2039 shows a copyright
19 date of 2024.
20 Do you see that?
21 A. I do.
22 Q. So this is, again, another document from this year
23 that you're citing for purposes of understanding
24 patents from 20 years ago; is that right?

1 ATTORNEY LOWENSTEIN: Objection, form,
2 scope.
3 A. So I cite this in paragraph 131.
4 BY ATTORNEY NIEBERG:
5 Q. Of your '854 declaration?
6 A. Yes.
7 Q. Okay.
8 A. And I'm citing it as part of where I'm explaining
9 what digital rights management is. And those
10 concepts haven't changed in that time frame.
11 Q. So the concepts of digital rights management hasn't
12 changed from 2024 -- strike that.
13 The concept of digital rights management
14 in 2024 is the same as it would have been in
15 2004-2005?
16 ATTORNEY LOWENSTEIN: Objection, form,
17 scope.
18 A. Yeah, let me put it a different way.
19 What digital rights management is and
20 the purpose of digital rights management hasn't
21 changed.
22 BY ATTORNEY NIEBERG:
23 Q. Okay.
24 A. The various implementations and technologies might

1 have, but the specific concept, which is what I was
2 getting at here, hasn't changed.
3 BY ATTORNEY NIEBERG:
4 Q. Okay. And you wrote in your paragraph 131 of your
5 '854 declaration, you say: "CAS, conditional
6 access system, used for OTT digital video streaming
7 service 'such as live sports.'"
8 Do you see that?
9 A. I do.
10 Q. Is your opinion that CAS, conditional access
11 systems, are only used for live sports?
12 A. I said "such as live sports."
13 Q. Is it used for anything else other than live
14 sports?
15 A. It is.
16 Q. Such as? Can you give me an example?
17 A. Now, when you're asking -- when you say "is it
18 used," are you talking about CAS, or is CAS for
19 digital video streaming services?
20 Q. Well, I'm asking for CAS more broadly, not just for
21 digital video streaming service.
22 A. Yeah. It's used in a lot of places.
23 Q. Can you name any examples?
24 A. File systems.

1 Q. Any other examples?
2 A. I think basically any place that you have
3 permissions and you want to prevent people who
4 aren't authorized from getting to something, you
5 could use conditional access system.
6 Q. And would that have been true in the 2004-2005 time
7 frame?
8 A. Yes.
9 Q. Do you know if conditional access systems were used
10 for video-on-demand services in the 2004-2005 time
11 frame?
12 A. They were.
13 Q. Do you know how a video-on-demand system works?
14 A. Yes, I do.
15 Q. Can you tell me how a video-on-demand system would
16 have worked in the 2004-2005 time frame?
17 A. Sure. I don't know what level of detail you're
18 looking for. In the late '90s I actually worked at
19 AT&T Labs on something called DOCSIS which was a
20 cable standard. So I can go into excruciating
21 detail or I can just give you a high-level overview
22 if you want.
23 Q. Let's start with a high-level overview, then we'll
24 drill down if needed.

1 A. Sure. In that time frame, you asked for
2 video-on-demand?
3 Q. Yes.
4 A. Right. So there would be a collection of content
5 that would be hosted by a hosting site. AT&T was
6 an example of that. And there would be content
7 producers that would license the content to the
8 hosting sites. And then users would subscribe to
9 the service.
10 They would be given, in some product
11 offerings, a smart card that would have some
12 information about their subscription and about who
13 they are. And the smart card would be put into a
14 set-top box to enable the use.
15 And then when a user would request a
16 particular piece of content, there would be an
17 authorization ship that would happen to make sure
18 that that user subscribed and is allowed to get
19 that content. And there would be some billing
20 procedure, because sometimes you would pay for each
21 item individually or sometimes you could pay to get
22 a set amount of content or even unlimited content,
23 depending on your subscription. So that would be
24 checked.

1 And then if the user -- if the
2 authorization succeeds, the server would then send
3 the content to the user's set-top box, and then the
4 user would be able to watch it.
5 Q. Okay. Let's drill down a little bit.
6 So there was content made by a content
7 producer or content owner, correct?
8 A. Yes.
9 Q. Like a movie studio, correct?
10 A. Yes.
11 Q. And they have a movie, correct?
12 A. Yes.
13 Q. Okay. And then give that movie to a service
14 provider; is that correct?
15 A. Yes.
16 Q. The service provider stores that content on a
17 server; is that correct?
18 ATTORNEY LOWENSTEIN: Objection, form.
19 A. So there were different models. Obviously, we're
20 talking about one particular example here of how
21 this happened. But there would be service
22 providers that would keep the content, the movie,
23 or whatever, themselves.
24 There were also providers who would

1 really just do the authentication check and
2 facilitate the content owners directly
3 communicating with the customers. So there were
4 different models.
5 BY ATTORNEY NIEBERG:
6 Q. Okay. The one where the content owner communicates
7 directly with the consumers, the content owner has
8 content; is that right?
9 A. Right.
10 Q. And they're storing it somewhere, right?
11 A. It would be stored, yeah.
12 Q. On a server, for example?
13 A. That's one way they could do it.
14 Q. Okay. And then a consumer would request access to
15 download that content from the server; is that
16 correct?
17 A. From the consumer's point of view, they don't
18 really know what's happening behind the scenes. So
19 they have an interface on their TV, and they say,
20 "I want to watch this movie," and they click on it.
21 And then there can be different architectures and
22 different business models that would have been
23 implemented in that time frame.
24 Q. Is one business model where the content owner

1 supplies the content to the consumer?
2 A. I don't recall there being one where they did it
3 directly. Like you wouldn't have Disney sending
4 their movies to Joe's house. But I suppose that
5 would be possible technologically. I just don't
6 recall seeing that. But remember that I worked at
7 AT&T labs, and we were a service provider. So
8 that's kind of the model that I would have seen.
9 Q. All right. So let's focus on the model you're most
10 familiar with then. At AT&T they license content
11 from a content owner, correct?
12 ATTORNEY LOWENSTEIN: Objection, scope,
13 form.
14 A. They did.
15 BY ATTORNEY NIEBERG:
16 Q. Okay. And then so they would get the movie file,
17 right?
18 A. What do you mean by get it?
19 Q. Well, how did the -- how did AT&T provide the movie
20 to the consumer?
21 A. Over the Internet.
22 Q. And where is it coming from over the internet?
23 A. I don't recall if it was always coming from AT&T or
24 if it was coming from -- you know, now that I think

1 about it, it was usually a content distribution
2 network. There would be intermediaries that would
3 house the actual content, and they would be closer
4 to the consumer than the servers of either the
5 service provider or the content owner. So the
6 users would actually be downloading it from a CDN.
7 Q. Why would they do that? Why would you use a CDN
8 intermediary rather than a content service
9 provider?
10 A. They really wouldn't have a choice. They don't get
11 to decide how they get it. The user just gets
12 what's available, and the user would just click on
13 movie and it would come from a CDN.
14 Q. I meant -- appreciate it, but I meant from the
15 perspective of AT&T, why would they use a CDN
16 rather than their own server to supply the movie to
17 their consumers?
18 A. The CDNs were a very effective third-party service
19 that those in the content distribution business use
20 because they could optimize for sharing content
21 with customers in many different locations. So
22 instead of AT&T having to build warehouses all over
23 the place where their customers lived, they could
24 rely on the CDN who was not just servicing AT&T but

1 would service CNN and a whole bunch of other
2 providers. So it let them specialize in that.
3 Q. Okay. So like a content -- like there would be a
4 content distribution network in New York, for
5 example, and a content distribution network in
6 Los Angeles, for example?
7 A. Well, take, for example, Akamai. Akamai was all
8 over the country, if not the world. They would
9 have servers based on population density. So that
10 if there was a city like New York where you
11 had millions of people, they could service that
12 city optimally. And if you were in some rural
13 Arkansas town, you wouldn't need to put in the same
14 number of servers that you would in New York.
15 Q. And so would the movie -- like a movie, if they
16 wanted to serve it to both rural Arkansas and
17 New York, would be there be a copy of the movie for
18 New York servers and then a copy of the movie for
19 the Arkansas servers?
20 A. You know, the CDNs hired very -- Akamai was created
21 by an MIT algorithms professor, Silvio Micali, he's
22 like one of smartest people in the world. And I
23 don't know what the algorithms were that they used
24 to determine that.

1 Q. Yeah. But do you have a -- well, do you think if
2 there was a movie, a popular movie, for example --
3 I don't know what it would have been around 2004 --
4 some popular movie, do you think they'd have just
5 one copy of the movie all over the network? Or
6 would they have multiple copies distributed in
7 different places around the network?
8 ATTORNEY LOWENSTEIN: Objection, form,
9 scope.
10 A. I don't know. I wasn't familiar with how Akamai
11 worked.
12 BY ATTORNEY NIEBERG:
13 Q. But you said -- but Akamai, using a content
14 distribution intermediary, would allow for like
15 more intelligence of how you distribute the
16 content; is that correct?
17 ATTORNEY LOWENSTEIN: Objection, form,
18 scope.
19 A. I mean, basically they allowed AT&T to focus on
20 what they were good at and Disney to focus on what
21 they were good at and Akamai to focus on what they
22 were good at.
23 BY ATTORNEY NIEBERG:
24 Q. Do you know if the content was secured on the

1 network?
2 ATTORNEY LOWENSTEIN: Objection, form,
3 scope.
4 A. So there were many different solutions by many
5 different providers. I know since I worked on it,
6 the AT&T system was using what was at the time
7 state-of-art security. And then there were other
8 networks that weren't. But I can't answer that in
9 general.
10 BY ATTORNEY NIEBERG:
11 Q. Do you know if there were any systems that would
12 encrypt the data as it was stored around the
13 network?
14 ATTORNEY LOWENSTEIN: Objection, form,
15 scope.
16 A. I don't know.
17 BY ATTORNEY NIEBERG:
18 Q. Were you aware -- were there descriptions, whether
19 commercial or in papers, of systems where the
20 content service provider like a cable company would
21 also distribute the content to their customers
22 rather than use a content distribution network?
23 ATTORNEY LOWENSTEIN: Objection, form,
24 scope.

1 A. I haven't studied that for this deposition. It's
2 not in my report, so I can't offer an opinion on
3 that.
4 BY ATTORNEY NIEBERG:
5 Q. Okay. So you didn't consider any implementations
6 where the content service provider would be storing
7 content before distributing it to consumers; is
8 that your opinion?
9 ATTORNEY LOWENSTEIN: Objection, form,
10 scope.
11 A. You know, I'm -- I prepared for this deposition by
12 reading the materials and the opinions that I
13 authored. If you could point me to something
14 you're referring to in my declaration, I'm happy to
15 answer a question.
16 BY ATTORNEY NIEBERG:
17 Q. Sure. One moment.
18 So you have Exhibit 2039 in front of
19 you?
20 A. That's the Marlin DRM?
21 Q. Yeah.
22 A. Yes, I do.
23 Q. Okay. And I'll try to find -- one moment.
24 You have -- you are on page 7.

1 Do you see that?
2 A. Page --
3 Q. Of the exhibit -- sorry. Page 7 of the Exhibit
4 2039.
5 Do you have that?
6 A. I do.
7 Q. Okay. And it --
8 ATTORNEY ELLIOTT: Just give me a
9 second.
10 ATTORNEY NIEBERG: Are you there?
11 ATTORNEY ELLIOTT: Yes.
12 BY ATTORNEY NIEBERG:
13 Q. Okay. So on page 7 of Exhibit 2039. It says,
14 effectively, DRM functionality is a superset of
15 CAS.
16 Do you see that?
17 A. Yes.
18 Q. What's the difference between DRM and CAS?
19 A. So CAS is kind of a broader category, and DRM is a
20 particular kind of CAS.
21 Q. Does -- is that what Exhibit 2039 says? It seems
22 to be saying to me that it's a -- DRM is a superset
23 of CAS. So is that -- is DRM broader than CAS or
24 CAS broader than DRM?

1 A. So I guess I'm viewing DRM as being a particular
2 implementation of CAS. So it has all the
3 functionality of CAS, but it has other things as
4 well.
5 Q. What other things does it have? DRM?
6 A. Right.
7 ATTORNEY LOWENSTEIN: Objection, form,
8 scope.
9 A. It says it in this paragraph: So DRM protects
10 content on any device with various distribution
11 models, offline, online, with or without return
12 channel. And it can also be applied to other types
13 of digital content such as ebooks, BICODE, and
14 more.
15 BY ATTORNEY NIEBERG:
16 Q. Would that have also been true in the 2004-2005
17 time frame?
18 A. Yes.
19 Q. What does it mean by distribution models offline?
20 A. Like, for example, if I give you a disk with some
21 data instead of using the internet to get it to
22 you.
23 Q. Okay. And then would distribution models online be
24 using the internet to transmit data to a recipient?

1 A. I would think so.
2 Q. What does it mean by with or without return
3 channel?
4 A. So with a return channel means that you can have
5 acknowledgements in the network. You can have data
6 going in both directions. And without means that
7 you have just one-way communication.
8 Q. This Exhibit 2039 says, towards the bottom of page
9 7, "A DRM license is typically a small file that
10 contains the content encryption key in encrypted
11 form along with some rules, policies, defining how
12 the contents may be used."
13 Do you see that?
14 A. Yes.
15 Q. That's saying the content is encrypted before it's
16 transmitted to the consumer?
17 A. I mean, I don't see that saying that in the
18 sentence, but I believe that is the case.
19 Q. And that would have been the case in 2004-2005?
20 ATTORNEY LOWENSTEIN: Objection, form,
21 scope.
22 BY ATTORNEY NIEBERG:
23 Q. In your AT&T project when AT&T supplied the movie
24 to consumers, was it only realtime viewing of the

1 movie?
2 ATTORNEY LOWENSTEIN: Objection, form,
3 scope.
4 A. I don't remember because I worked on a very
5 specific aspect of the cryptography of that system
6 and I wasn't involved in the business model. So I
7 don't really know.
8 BY ATTORNEY NIEBERG:
9 Q. You don't know if the content was delivered and
10 played back at a later time?
11 A. I can only make assumptions and guesses. So I
12 don't know for sure.
13 Q. Do you know if in the 2004-2005 time frame that
14 there were systems described where a user would
15 download content for later use?
16 ATTORNEY LOWENSTEIN: Objection, scope.
17 A. Are you asking if that existed at all? Or if the
18 project that we did at AT&T did that?
19 BY ATTORNEY NIEBERG:
20 Q. The former. Would a person with skill in the art
21 have been aware of systems where content was
22 delivered to consumers for a later consumption?
23 ATTORNEY LOWENSTEIN: Objection, scope.
24 A. I have not studied that for this deposition.

1 BY ATTORNEY NIEBERG:
2 Q. You don't recall if any of the exhibits in the
3 record described that?
4 A. I didn't memorize them. I'm happy to look through
5 them and discuss it, but...
6 Q. Okay. Do you have Exhibit 2040? You should have
7 it. Let me see.
8 ATTORNEY LOWENSTEIN: Greg, I don't know
9 if you want to -- like, within five or ten minutes,
10 I'm going to want a break, so...
11 ATTORNEY NIEBERG: Oh, well, let's take
12 a break now before we turn to that.
13 (Off the record at 1:51 p.m.)
14 (Back on the record at 2:02 p.m.)
15 BY ATTORNEY NIEBERG:
16 Q. Welcome back, did you speak to anyone about your
17 testimony during the break?
18 A. No.
19 Q. Okay. Before the break we were going to discuss
20 Exhibit 2040. Do you have that? Which was tab 23.
21 Exhibit 2040 is a document entitled "What is
22 Conditional Access?"
23 Do you see that?
24 A. Yes.

1 Q. And it's from August 1, 2023?
2 A. Yes.
3 Q. All right. So it's another article that is from a
4 couple years ago; is that right?
5 A. Right.
6 Q. And in your opinion is this article consistent with
7 a person of skill's understanding in the 2004-2005
8 time frame?
9 ATTORNEY LOWENSTEIN: Objection, scope.
10 A. So I used this article for a particular statement
11 that's in my report and that statement is still --
12 was true back then and is true now.
13 BY ATTORNEY NIEBERG:
14 Q. Okay. Did you identify anything in Exhibit 2040
15 that you believe was not true in 2004-2005?
16 A. I don't recall saying something like that.
17 Q. So Exhibit 2040 says that, "It's most commonly
18 known as pay-per-view when used for television.
19 But conditional access systems, CAS, are also used
20 for paid services like phone and internet."
21 Do you see that?
22 A. No. Where are you reading?
23 Q. On the first page of Exhibit 2040, in the middle of
24 that paragraph.

1 A. Okay.
2 Q. Okay. Do you see that?
3 A. I see it.
4 Q. Would that have been true in 2004-2005?
5 ATTORNEY LOWENSTEIN: Objection, scope.
6 A. Yes.
7 BY ATTORNEY NIEBERG:
8 Q. And then if you turn to page 2, the last sentence
9 of the paragraph that carries over from page 1, it
10 says, "The subscriber authorization system
11 identifies and verifies the user, shares the
12 information with necessary service providers, and
13 encrypts all data to prevent security attacks."
14 Do you see that?
15 A. I'm sorry. It's the last sentence of the first
16 paragraph?
17 Q. Yeah, there's -- the printing here makes it hard.
18 I can't tell.
19 The last sentence of that top part, I
20 can't tell if that's an entirely new paragraph or a
21 continuation of the previous paragraph.
22 The sentence that begins, "The
23 subscriber authorization system."
24 A. Okay. I see that.

1 Q. Okay. And it says -- it concludes and says,
2 "Encrypts all data to prevent security attacks."
3 Do you see that?
4 A. I see that.
5 Q. Okay. So the data is encrypted to prevent security
6 attacks, right?
7 ATTORNEY ELLIOTT: Objection, form,
8 scope.
9 BY ATTORNEY NIEBERG:
10 Q. Okay. Would that have been true in the 2004-2005
11 time frame that a CAS system would encrypt the data
12 to prevent security attacks?
13 ATTORNEY LOWENSTEIN: Objection, form,
14 scope.
15 A. I haven't looked into that, and I don't discuss
16 that in my report, so I'm not prepared to answer
17 that right now.
18 BY ATTORNEY NIEBERG:
19 Q. Do you have an opinion about whether that is true
20 or not in the 2004-2005 time frame?
21 ATTORNEY LOWENSTEIN: Objection, form,
22 scope.
23 A. I'm not offering an opinion on it. I would need to
24 look into that.

1 BY ATTORNEY NIEBERG:
2 Q. Do you see in the few paragraphs down, it says,
3 "The STB or receiver requires an encryption key
4 wrapped in an entitlement control message, ECM, to
5 decrypt the content"?
6 A. I see that.
7 Q. What does "key wrapped" mean?
8 A. I'm just going to get a little context here.
9 So basically what "wrapped" means here
10 is that the key -- the encryption key itself -- is
11 part of a larger message.
12 Q. Okay. Is that encryption key encrypted or it's
13 just part of a message?
14 A. It doesn't say here.
15 Q. Okay. You can put that aside.
16 Do you have a copy of the '854 patent?
17 You should have a copy of it. And I could also
18 give you an electronic one -- but you actually may
19 already have.
20 A. I have it right here.
21 Q. Okay. Thank you.
22 Yeah, I think the last file I dropped
23 into the chat was the '854 in case you want the
24 electronic.

1 A. Let me open that up. Okay.
2 Q. Okay. All right. If you turn to column 1 of the
3 '854 patent --
4 A. Okay.
5 Q. All right. Do you see right around line 23, it
6 says "Field of the invention"?
7 A. Yes.
8 Q. And then it says, "The present invention relates,
9 in general, to a system for securing data from
10 unauthorized access or use."
11 Do you see that?
12 A. Yes.
13 Q. Okay. Is the field of the invention securing data
14 or securing data from unauthorized access or use?
15 A. It says, "Securing data from unauthorized access or
16 use."
17 Q. Is there -- well, how do you know that?
18 A. I'm just reading it.
19 Q. It tells you that's the field of the invention?
20 That's your opinion?
21 ATTORNEY LOWENSTEIN: Objection, form.
22 A. It says, "Field of the invention: The present
23 invention relates in general to a system for
24 securing data from unauthorized access or use."

1 BY ATTORNEY NIEBERG:
2 Q. And so that's a field of the invention because the
3 patent tells you that's the field of the invention?
4 ATTORNEY LOWENSTEIN: Objection, form.
5 A. So I don't know. Maybe you're asking me for some
6 kind of a legal opinion about a legal term that I'm
7 not sure what it is. But I -- you know, I'm not a
8 lawyer.
9 BY ATTORNEY NIEBERG:
10 Q. Okay. So your understanding of the field of the
11 invention is securing data from unauthorized access
12 or use; is that correct?
13 ATTORNEY LOWENSTEIN: Objection, form.
14 Do you want me to state the objection?
15 I can explain it if you'd like.
16 ATTORNEY NIEBERG: I would ask no
17 inflection when you state an objection on the
18 record and no raising your voice when you do it.
19 ATTORNEY LOWENSTEIN: I'm not sure what
20 you're talking about.
21 A. So in paragraph 101, it says that, "I've been
22 informed by counsel and understand that to discern
23 the field of endeavor, it's appropriate to look to
24 several traditional sources such as the patent's

1 title, the claim preamble, abstract, background of
2 invention, and field of the invention, and the
3 function and structure of the claimed inventions."
4 Then I have a table that talks about the
5 field of the endeavor.
6 And so is your question what is the
7 field of the invention or the field of the
8 endeavor?
9 BY ATTORNEY NIEBERG:
10 Q. Do you understand there to be a difference between
11 the field of invention and the field of endeavor?
12 A. I believe the field of invention is one of the
13 standard headers where the inventor can write down
14 what they see the field of the invention is.
15 And the field of the endeavor is -- the
16 analysis involves looking at all of those other
17 things: the title, abstract, background of
18 invention, the summary of invention, and the claims
19 as well.
20 Q. And so the field of endeavor, in your opinion, is
21 securing data; is that correct?
22 A. Yes.
23 Q. And the field of invention is securing data from
24 unauthorized access or use; is that right?

1 A. That's what the authors put in their field of the
2 invention field.
3 Q. Yeah. Is there a difference between securing data
4 and securing data from unauthorized access or use?
5 A. I haven't considered that question. I'd have to
6 think about it.
7 Q. Sitting here today, do you have an opinion about
8 whether there's a difference between securing data
9 and securing data from unauthorized access or use?
10 A. I'd have to think about it some more. I can't
11 think of anything right now.
12 Q. Well, what does it mean to secure data from
13 unauthorized access?
14 A. It means that parties that shouldn't -- that
15 haven't been given access or haven't purchased
16 access and are not parties that should have the
17 access can't get access to the data.
18 Q. And then what does it mean to be securing data from
19 unauthorized use?
20 A. The same thing with respect to people that
21 shouldn't use the data, that they can't use the
22 data.
23 Q. Okay. And what does it mean to secure data?
24 A. It means to protect the data.

1 Q. What do you mean by "protect the data"?
2 A. To provide security for the data such that it isn't
3 available to people who are not supposed to have it
4 and that they can't be changed.
5 Q. Okay. If you go back to the '854, column 1, line
6 35 --
7 A. Okay.
8 Q. -- in the background of the invention, the '854
9 says, "Thus, an ever-increasing need exists for
10 ensuring data stored and transmitted over these
11 systems cannot be read or otherwise compromised."
12 Do you see that?
13 A. Yes.
14 Q. Well, the patent -- the patent is saying there's a
15 need to protect data that is stored or -- and
16 transmitted from being read or compromised?
17 A. Are you -- I'm not sure I --
18 Q. Well, I guess, what it's saying is there's a need
19 for something. And so it's just saying there's a
20 need for ensuring data stored and transmitted over
21 these systems cannot be read or otherwise
22 compromised, right?
23 A. That's what it says.
24 Q. Okay. Is the patent trying to address that need?

1 ATTORNEY LOWENSTEIN: Objection, form.
2 A. This is the background of the invention section,
3 and it's talking about, you know, where the world
4 was before the invention.
5 BY ATTORNEY NIEBERG:
6 Q. Okay. And is it -- is the patent trying to address
7 the need that it claims was existing in the prior
8 art?
9 ATTORNEY LOWENSTEIN: Objection to form.
10 A. I would say that that is part of the problem that
11 the invention solves.
12 BY ATTORNEY NIEBERG:
13 Q. Okay. Then a little bit below that the patent
14 says, in column 1, line 47, "Cryptography, in
15 general, refers to protecting data by transforming
16 or encrypting it into an unreadable format."
17 Do you see that?
18 A. Yes.
19 Q. All right. Is there a difference between
20 transforming and encrypting?
21 ATTORNEY LOWENSTEIN: Objection, form.
22 A. I don't -- encrypting is a -- is a type of
23 transforming, but not all transforming is
24 encrypting.

1 BY ATTORNEY NIEBERG:
2 Q. Well, what's the difference?
3 A. You can perform transformations on data that does
4 not involve encrypting it.
5 Q. Can you give an example of that?
6 A. You add 1 to the data.
7 Q. And why would you want to -- well, let's take a
8 step back.
9 So the patent says that you can --
10 "cryptography" refers to protecting data by
11 transforming or encrypting, right?
12 A. That's what it says.
13 Q. Is it your opinion that adding a 1 to this data is
14 a type of cryptography?
15 A. No.
16 Q. Okay. So can you give me an example of a
17 transforming that is a type of cryptography?
18 A. Oh, I thought you were asking me to give you an
19 example of transforming that's not encrypting.
20 Q. Okay. Fair enough.
21 So let me ask, then, can you give me an
22 example of transforming that is a form of
23 cryptography, but is not encrypting?
24 A. Yeah. Hashing the data.

1 Q. And hashing the data protects the data?
2 A. Yes.
3 Q. How?
4 A. Let's say I have a password and I don't want you to
5 know what it is, but I want to be able to use it
6 for authentication, I can hash the password and put
7 it in a database.
8 And now when someone tries to log in,
9 they type in their password, and then you hash it
10 and compare it to what's in the database. But you
11 didn't have to put the password in clear in the
12 database, so you protected the password.
13 Q. What would be the example of encryption, then?
14 A. Where you have a secret key, and you take some data
15 and you apply an encryption function using that key
16 to the data, and then you get a separate text.
17 Q. Is one difference between cryptographic
18 transforming and cryptographic encrypting the
19 presence of an encryption key?
20 A. Yes.
21 Q. Okay. So if you use an encryption key, you're
22 doing encrypting, correct?
23 A. Perhaps.
24 Q. Okay. If you're doing cryptographic transforming,

1 would you be using an encryption key?
2 A. Possibly.
3 Q. Okay. Would using the encryption key be the
4 transforming or is it something in addition to the
5 transforming?
6 A. I'm lost in that.
7 Q. Yeah, no. I'm trying -- that's why I'm trying to
8 understand how -- how would -- if someone asked you
9 what's the difference between cryptographic
10 transforming and cryptographic encrypting, what is
11 that difference?
12 A. I would say that --
13 ATTORNEY LOWENSTEIN: Objection, form.
14 A. I would say that encryption always involves an
15 encryption function and a key.
16 And transforming can involve a key, like
17 if you're producing a message authentication code,
18 or it can also not involve a key if you're using a
19 hash function, a cryptographic hash function.
20 So those are just examples of
21 transformation. Every single encryption is a
22 transformation, but there are transformations that
23 are cryptographic but are not encryption.
24 BY ATTORNEY NIEBERG:

1 Q. Is one better than the other?
2 A. For different applications.
3 Q. I'm sorry.
4 Is your answer that they're used for
5 different applications or that depending on the
6 application, one may be better than the other?
7 A. The latter.
8 Q. Okay. Depending on the application, a
9 cryptographic transformation may be better than a
10 cryptographic encryption.
11 Is that your opinion?
12 A. Every cryptographic transformation -- I'm sorry.
13 Every encryption is a cryptographic
14 transformation.
15 Q. Okay. But there may be applications where you
16 don't need to do the cryptographic encryption, you
17 can just do a cryptographic transformation; is that
18 your opinion?
19 A. Yes.
20 Q. And how does a person of skill make that decision?
21 A. Well, they take a course in cryptography and they
22 learn that if you want to do something like a
23 digital signature or a message authentication code
24 or a password assaulting or hashing, you would use

1 a hash function; and if you want confidentiality of
2 your data, you would use an encryption function if
3 you want to be able to recover the data.
4 Q. Okay. If you go to column 2, line 40, where it
5 says "summary of the invention," do you see that?
6 A. Yes.
7 Q. And then at line 42 through 44, it says, "Based on
8 the foregoing, a need exists to provide a
9 cryptographic system whose security is
10 user-independent while still supporting mobile
11 users."
12 Do you see that?
13 A. Yes.
14 Q. Okay. You're familiar with that sentence?
15 A. Yes.
16 Q. You discussed it in your declaration?
17 A. I do.
18 Q. Okay. What does a patent mean by security that is
19 user-independent?
20 A. So "user-independent" means there's not a
21 particular user that's needed in order to -- well,
22 let me say it better.
23 I don't know if I'm allowed to say
24 "strike that," but I'm going to start over.

1 The data is secured in a way that is not
2 dependent on a particular user; it's dependent on
3 the data.
4 Q. What do you mean by "dependent on the data"?
5 A. So you can protect the data, for example, by
6 splitting the data and encrypting -- encrypting the
7 data, splitting it into shares. So the way that's
8 described in the '854 patent.
9 But that is not going to depend on a
10 particular user who's going to be using the data.
11 Q. And what do you mean by "not going to depend on the
12 particular user who's going to use the data"?
13 A. So there isn't, like, a user with a key that can be
14 used to decrypt all of the pieces of the data if --
15 no user will have enough of the data to be able to
16 obtain the original data.
17 Q. Okay. And then the patent in column -- the
18 '854 patent in column 2 --
19 A. I'm sorry. I was just pausing for a breath.
20 Q. Oh, I apologize.
21 A. I wasn't finished.
22 So that's in reference to when the data
23 is stored. So the data is stored such that in no
24 user, at any particular location where a piece of

1 the data is, can reconstruct the whole data.
2 Q. Okay. In the '854, column 2, lines 42 through 44,
3 also refers to, "While still supporting mobile
4 users."
5 Do you see that?
6 A. Yes.
7 Q. Is it your opinion that these -- the '854 patent
8 can only be used with mobile users?
9 A. No.
10 Q. Do any of the claims of the '854 patent -- well,
11 strike that.
12 Do any of the independent claims of the
13 '854 patent refer to a mobile user?
14 A. I don't see anything about a mobile user in the
15 independent claims.
16 Q. And if you'd like, you can check the other two
17 patents, but do you recall a mobile user being
18 required by any of the independent claims at issue
19 here?
20 A. Well, if it's there, then the patent speaks for
21 itself.
22 But sitting here, I don't recall that.
23 I'm happy to look if you want me to.
24 Q. Okay. Is it your opinion that a system that does

1 not have mobile users is outside the scope of
2 Claim 1 of the '854 patent?
3 A. I have not looked at that question.
4 Q. Well, sitting here today, do you have an opinion
5 about whether Claim 1 requires a system that has
6 mobile users?
7 A. I'm not offering opinions like that. If it's in my
8 report, then that's what I'm offering.
9 Q. Well, you -- let's see. One moment. Let me
10 find -- do you recall discussing that sentence --
11 we said before, in the '854 patent, that refers to
12 supporting mobile users, correct?
13 A. I was quoting from the summary of the invention,
14 but I wasn't offering opinions on any limitations
15 of the claims.
16 Q. Understood. Well, let me ask a question then.
17 Hold on.
18 So for example, on paragraph 106 of your
19 '854 declaration, you say, "First the '854 is
20 directed towards creating a cryptographic system
21 whose security is user independent while still
22 supporting mobile users."
23 Do you see that?
24 A. Right.

1 Q. And then you conclude that paragraph 106 of your
2 declaration, "Consequently, the '854 addresses the
3 need 'to provide a cryptographic system whose
4 security is user-independent while still supporting
5 mobile users.'"
6 Do you see that?
7 A. Yes.
8 Q. What is the relevance of supporting mobile users to
9 a problem the patent is trying to address?
10 A. I haven't looked at that.
11 Q. So you say, "One of the problems the patent
12 addresses is a need to provide a cryptographic
13 system whose security is user-independent while
14 still supporting mobile users."
15 But you don't understand the relevance
16 of supporting mobile users to that problem?
17 A. I haven't studied that question. It's not
18 something I address in my declaration.
19 Q. So when you wrote this sentence that "while
20 supporting mobile users," you didn't think about
21 what that meant?
22 A. I was quoting from the summary of the invention,
23 but I didn't elaborate or give it further thought
24 as to what the supporting mobile users -- how that

1 might relate to the claims or anything like that.
2 Q. Okay. So in your view, a problem the patent is
3 trying to address is to provide a cryptographic
4 system whose security is user-independent while
5 still supporting mobile users; is that correct?
6 A. That is one of the things that is in the summary of
7 the invention and that is part of what the
8 inventors were working on.
9 Q. Okay. But you can't tell me what the patents meant
10 by still "supporting mobile users"?
11 A. Well, I -- you know, still supporting mobile users
12 means that if they didn't want a solution that
13 would break for mobile users, but it didn't mean
14 that only mobile users can use it. It means that
15 also mobile users can use it.
16 Q. Okay. Does the system require mobile users?
17 ATTORNEY LOWENSTEIN: Objection, form,
18 scope.
19 A. I haven't studied that. I don't see that to be the
20 case. That's not an opinion that's in my report.
21 BY ATTORNEY NIEBERG:
22 Q. Okay. In paragraph 102 of your '854 declaration,
23 you say, "For summary of the invention, one aspect
24 of present invention is to provide a method for

1 securing virtually any type of data from
2 unauthorized access or use."
3 Do you see that?
4 A. No.
5 ATTORNEY LOWENSTEIN: You said
6 paragraph 102?
7 A. Yeah.
8 BY ATTORNEY NIEBERG:
9 Q. I'm looking at the table in your '854 declaration.
10 In paragraph 102 --
11 A. Right.
12 Q. -- there's a table that you created underneath
13 there?
14 A. Right. I didn't know you were reading from the
15 table.
16 Q. Oh, I apologize if there was confusion there. But,
17 yeah, so there's -- in paragraph 102 you -- within
18 paragraph 102 you have a table, correct?
19 A. Yes.
20 Q. Okay. And so in paragraph 102 of your '854
21 declaration, you have a row "Summary of the
22 Invention," correct?
23 A. Right.
24 Q. And within that row on the second column you quote

1 a portion of the patent at column -- the
2 '854 patent at column 2, lines 45 to 47, correct?
3 Is that correct?
4 A. Yes.
5 Q. Okay. And what you quote talks about securing
6 virtually any type of data from unauthorized access
7 or use.
8 Do you see that?
9 A. I see that.
10 Q. What does "virtually any type of data" mean?
11 ATTORNEY LOWENSTEIN: Objection, scope.
12 A. The way I would understand that would mean to be
13 just about any type of data.
14 BY ATTORNEY NIEBERG:
15 Q. Like a Word document, would that be a type of data?
16 A. I would say so.
17 Q. A picture file, would that be a type of data?
18 A. Yes.
19 Q. A collection of the picture files, would that be a
20 type of data?
21 A. Yes.
22 Q. A movie file, would that be a type of data?
23 ATTORNEY LOWENSTEIN: Objection, form.
24 A. If it's a file of zeros and ones, then it would be

1 a data file.
2 BY ATTORNEY NIEBERG:
3 Q. Okay. Column 2 in the '854 patent, line 50 it
4 says, "Encryption of the data may be performed
5 prior to or after the first parsing, splitting,
6 and/or separation [sic] of the data."
7 Do you see that?
8 A. Separating.
9 Q. Separating of the data.
10 A. Yes.
11 Q. Okay. Is there a difference between parsing,
12 splitting, and separating of the data?
13 ATTORNEY ELLIOTT: Objection, scope.
14 A. Can I hear the question again, please?
15 BY ATTORNEY NIEBERG:
16 Q. Sure.
17 Is there a difference between parsing,
18 splitting, and separating the data?
19 ATTORNEY LOWENSTEIN: Objection, scope,
20 form.
21 A. All of these are referring to the same thing, of
22 taking something and breaking it up into parts.
23 BY ATTORNEY NIEBERG:
24 Q. Does the data have to be broken up into the parts

1 in a particular way?
2 ATTORNEY LOWENSTEIN: Objection, form,
3 scope.
4 A. You're asking if on this sentence it's implying
5 that it has to happen a certain way?
6 BY ATTORNEY NIEBERG:
7 Q. Well, I'm asking does the patent require breaking
8 the data up into pieces in a particular way?
9 ATTORNEY LOWENSTEIN: Objection, form,
10 scope.
11 BY ATTORNEY NIEBERG:
12 Q. Okay. Let's move on for a moment.
13 Go to paragraph 149 of your
14 '854 patent -- declaration, excuse me.
15 A. Okay.
16 Q. Okay. So in paragraph 149 you wrote, "Nor does the
17 '854's discussion of share suggest that a packet
18 payload would be a 'data share' or a 'data chunk'
19 when encrypted."
20 Do you see that?
21 A. Yes.
22 Q. And then you wrote, "As the '854 explains,
23 partitioning the data set into chunks increases
24 security because when 'data remains whole and

1 intact it is 'subject to attack.'"
2 Do you see that?
3 A. Yes.
4 Q. All right. So one of the problems the patent is
5 addressing is security when data remains whole and
6 intact; is that right?
7 ATTORNEY LOWENSTEIN: Objection, form.
8 A. Can I hear the question again, please?
9 BY ATTORNEY NIEBERG:
10 Q. Sure. Well, the next sentence says the '854
11 addresses this concern.
12 Do you see that?
13 A. Yes.
14 Q. It's a concern; it's a problem, right?
15 ATTORNEY LOWENSTEIN: Objection.
16 A. It says it's a concern.
17 BY ATTORNEY NIEBERG:
18 Q. Is it a problem or is it not a problem?
19 ATTORNEY LOWENSTEIN: Same objection.
20 A. As what?
21 BY ATTORNEY NIEBERG:
22 Q. Whatever you wrote here. You said the '854
23 addresses this concern. What concern are you
24 referring to?

1 A. That when data remains whole or intact it's subject
2 to attack.
3 Q. Why is it a concern of the '854 patents?
4 A. Because the '854 patent is about securing data.
5 Q. Why is data remaining whole and intact a concern?
6 A. An adversary would have access. Let's say an
7 adversary breaks into the site where the data is,
8 then all the data's there.
9 Q. And so it's problematic if you keep all the data in
10 one location; is that correct?
11 ATTORNEY LOWENSTEIN: Objection, form.
12 A. It is a risk.
13 BY ATTORNEY NIEBERG:
14 Q. And how does the patent address that risk?
15 A. I'm going to read from my report, "The '854
16 addresses this concern in part by performing a
17 cryptographic parsing and splitting of the
18 encrypted the file."
19 Q. What does cryptographic parsing and splitting of
20 the encrypted file mean?
21 ATTORNEY LOWENSTEIN: Objection, scope,
22 form.
23 A. So what it's doing here is this -- it's kind of a
24 high-level overview of -- this is in the summary of

1 the invention, so it's talking about -- oh, wait.
2 Are we in the summary? Oh, sorry.
3 Okay. So I'm sorry. I was looking at
4 the reference I made here and now I forgot your
5 question.
6 BY ATTORNEY NIEBERG:
7 Q. Okay. So you wrote in paragraph 149 of your '854
8 declaration that the '854 addresses this concern in
9 parts by "performing a cryptographic parsing and
10 splitting of the encrypted the file."
11 Do you see that?
12 A. Yes.
13 Q. Did you understand what the patent meant when you
14 wrote that sentence?
15 A. Yes.
16 Q. Okay. My question is, what does cryptographic
17 parsing and splitting of the encrypted file mean?
18 ATTORNEY ELLIOTT: Objection, form,
19 scope.
20 A. In this particular portion of the specification
21 it's providing an overview of the approach in one
22 of the embodiments. It's saying that the encrypted
23 file is broken up using cryptographic techniques
24 into two or more shares.

1 BY ATTORNEY NIEBERG:
2 Q. And how does that address the concern of data
3 remaining whole and intact?
4 A. Because the idea is to put one of those shares, for
5 example, in one place and another share in another
6 place. So now the data is not whole or intact, so
7 if an attacker comprises one of the sites, but not
8 the other sites, then they haven't gotten the data.
9 Q. Okay. And by -- you said the data gets split into
10 shares, two more shares; is that right?
11 A. The cryptographic parsing and splitting of the
12 encrypted file into two or more portions or shares.
13 Q. Well, I mean, my question is: So does it have to
14 be a cryptographic parsing and splitting to address
15 the concern, or could it just be splitting of the
16 data?
17 ATTORNEY LOWENSTEIN: Objection, scope,
18 form.
19 A. For this embodiment that's being discussed here?
20 BY ATTORNEY NIEBERG:
21 Q. No. The patent, you say -- you say: The patent
22 explains partitioning the data set into chunks
23 increases security because when "data remains whole
24 and intact," it is "subject to attack."

1 And you don't have a cite for that.
2 A. It's in the line -- I'm sorry -- column 56, line 47
3 through 61. It's in there.
4 Q. Okay. And my question is: To address the concern
5 of data remaining whole and intact, does the
6 splitting have to be a cryptographic splitting, or
7 can it be non-cryptographic splitting?
8 ATTORNEY LOWENSTEIN: Objection, form,
9 scope.
10 A. So this paragraph that I put in front is about one
11 embodiment, and it's saying that this embodiment
12 would do a cryptographic parsing and splitting.
13 I haven't offered an opinion in this
14 case about whether or not non-cryptographic parsing
15 or splitting would be secure.
16 BY ATTORNEY NIEBERG:
17 Q. Well, so you're -- in your last sentence of
18 paragraph 149 you write, "Thus, the '854 teaches
19 that splitting the data set into shares helps
20 secure the data."
21 Do you see that?
22 A. I do.
23 Q. Okay. Should that say "cryptographic splitting"?
24 A. Cryptographic splitting is a form of splitting.

1 I haven't done an analysis on whether
2 there's a way to do a non-cryptographic split
3 that's still secure.
4 Q. Well, you said before that you split it and you
5 stored one piece in one location and another piece
6 in another location; is that right?
7 A. I said that.
8 Q. And that provides security by having one piece in
9 one location and the other piece in the other
10 location; is that right?
11 ATTORNEY LOWENSTEIN: Objection, form.
12 A. That makes it harder for an attacker to get the
13 data.
14 BY ATTORNEY NIEBERG:
15 Q. Okay. Does it matter if that portion's regenerated
16 for cryptographic process or not?
17 A. I think that a cryptographic process is likely to
18 provide more security, but I don't know if it's the
19 only way to achieve security because I haven't
20 studied that.
21 Q. Okay. If you turn to '854 patent, column 3 --
22 well, I'm sorry. I apologize.
23 Before we move on, do any of the -- does
24 the independent claim of the '854 patent -- sorry.

1 Strike that.
2 Do the independent claims of the
3 '854 patent require cryptographic splitting?
4 ATTORNEY LOWENSTEIN: Objection, form,
5 scope.
6 A. I am not offering an opinion on that at this time.
7 BY ATTORNEY NIEBERG:
8 Q. So you are not offering an opinion about whether
9 the -- Claim 1 of the '854 patent requires a
10 cryptographic splitting or not; is that correct?
11 ATTORNEY LOWENSTEIN: Objection, form,
12 scope.
13 A. If it's in my report, then you can show me and we
14 can discuss it, but I don't recall offering an
15 opinion on that. And I don't have any opinions
16 right now that are not in my report.
17 BY ATTORNEY NIEBERG:
18 Q. Okay. So I don't see it in your report, and that's
19 what I'm asking you.
20 Is it your opinion that Claim 1 requires
21 cryptographic splitting of the data?
22 ATTORNEY LOWENSTEIN: Objection, form,
23 scope.
24 A. I didn't see in the petition nor in

1 Dr. Bhattacharjee's declaration or testimony
2 anything about that, so I didn't respond to that.
3 I'm not offering an opinion at this
4 point in the case on that question.
5 BY ATTORNEY NIEBERG:
6 Q. Okay. And why are you talking about cryptographic
7 parsing and splitting in paragraph 149 of your '854
8 declaration?
9 A. I'm describing what the '854 patent teaches, but
10 that's very different from saying whether something
11 is required by the claims.
12 Q. And just so the record's clear, you have no opinion
13 about whether Claim 1 of the '854 patent requires
14 cryptographic parsing and splitting of the data?
15 ATTORNEY LOWENSTEIN: Objection, form,
16 scope.
17 A. So, as I said, I -- if there is anything in my
18 report to that effect, I'm happy to go over it.
19 At this point in the case, that is not
20 something that I studied or an opinion that I'm
21 offering.
22 BY ATTORNEY NIEBERG:
23 Q. Okay. Can you turn to '854 patent, column 3?
24 A. Okay.

1 Q. All right. And then on line 34, do you see that
2 paragraph?
3 A. Okay.
4 Q. It says, "According to yet another aspect of the
5 invention, the trust engine includes one or more --
6 one or multiple depositories for storing portions
7 of each cryptographic key and authentication data."
8 Do you see that?
9 A. Yeah.
10 Q. And then it says, "The portions are created through
11 a data splitting process that prohibits
12 reconstruction without a predetermined portion from
13 more than one location in one depository or from
14 multiple depositories."
15 Do you see that?
16 A. Yes.
17 Q. And then it says, "According to another embodiment,
18 the multiple depositories may be geographically
19 remote such that a rogue employee or otherwise
20 compromised system at one depository will not
21 provide access to a user's key or authentication
22 data."
23 Do you see that?
24 A. Yes.

1 Q. Okay. Why would geographically remote -- well, let
2 me ask -- the first question is: When it's
3 referring to "geographically remote," is that with
4 remote -- are the depositories remote with respect
5 to each other or remote with respect to the
6 cryptographic engine?
7 ATTORNEY LOWENSTEIN: Objection, scope.
8 A. I would assume it's referring to depositories that
9 are remote from each other.
10 BY ATTORNEY NIEBERG:
11 Q. And why would you assume that?
12 ATTORNEY LOWENSTEIN: Objection, scope.
13 A. Because it talks about multiple depositories being
14 geographically remote such that a rogue employee
15 could not -- that one depository could not provide
16 access to keys.
17 So the depositories are where the
18 different portions are stored, and it seems like
19 it's describing an objective of keeping someone
20 from obtaining more than one of the portions.
21 BY ATTORNEY NIEBERG:
22 Q. And how does it achieve that objective of
23 preventing an employee from obtaining more than one
24 portion?

1 ATTORNEY LOWENSTEIN: Objection, form,
2 scope.
3 A. So from my reading of this paragraph, it's saying
4 that if they are geographically remote, then, you
5 know, a physical compromise of a system would only
6 yield the portion that's there, but then you would
7 need the other portion at the other remote location
8 to actually get any useful data.
9 BY ATTORNEY NIEBERG:
10 Q. Is that true even if the data are encrypted?
11 ATTORNEY LOWENSTEIN: Objection, form,
12 scope.
13 A. I haven't studied that. I didn't offer an opinion
14 on that.
15 BY ATTORNEY NIEBERG:
16 Q. Turn to column 19 of the '854 patent. Are you
17 there?
18 A. Yes.
19 Q. Okay. Column 19, line 49 of the '854 patent says:
20 By distributing the sensitive data into distinct
21 and independent storage facilities, D1 through D4,
22 some or all of which may be advantageously
23 geographically separated, the depository system 700
24 provides redundancy along with additional security

1 measures."
2 Do you see that?
3 A. Yes.
4 Q. What does "redundancy" mean here?
5 ATTORNEY LOWENSTEIN: Objection, scope,
6 form.
7 A. So that's explained in the following sentences
8 saying that -- let's say you only needed two of the
9 shares to reconstruct the data, and you had them in
10 four, and then one of the sites went down, like a
11 power failure, you could still get the data from
12 two of them.
13 And why is that? Oh, sorry. Would
14 that be helpful that you could have -- you could
15 recover the data if one of the storage facilities
16 had a power failure?
17 ATTORNEY LOWENSTEIN: Objection, form,
18 scope.
19 A. Would it be helpful to who?
20 BY ATTORNEY NIEBERG:
21 Q. To the system that's trying to recover the data.
22 ATTORNEY LOWENSTEIN: Objection, form,
23 scope.
24 A. I'm not sure I follow the scenario.

1 So are you asking if it's helpful to
2 have redundancy?
3 BY ATTORNEY NIEBERG:
4 Q. Yes. Is it helpful to have redundancy?
5 ATTORNEY LOWENSTEIN: Objection to form.
6 A. It can be.
7 BY ATTORNEY NIEBERG:
8 Q. And when can it be helpful?
9 ATTORNEY LOWENSTEIN: Objection, form,
10 scope.
11 A. In the event that there would be problems at some
12 of the sites.
13 BY ATTORNEY NIEBERG:
14 Q. And when could it not be helpful?
15 A. While the sites are operating perfectly.
16 Q. Is it not helpful, or is it just not necessary at
17 that moment in time?
18 A. I don't know.
19 Q. Okay. What's the --
20 A. I'm sorry?
21 Q. I was just looking -- oh, in column 20 -- and I
22 think this is consistent with something you
23 testified to, but I'll -- let me ask my question.
24 So column 20, line 1, it says, "In fact,

1 even a rogue employee would be greatly challenged
2 to subvert the needed multiple independent
3 geographically remote data storage facilities."
4 Do you see that?
5 A. Yes.
6 Q. What does it mean by a "rogue employee"?
7 ATTORNEY LOWENSTEIN: Objection, scope.
8 A. Somebody that's trying to bypass the security of
9 the system or that's willing to break the rules.
10 BY ATTORNEY NIEBERG:
11 Q. But it's someone who has access to the system, but
12 is trying to break it?
13 A. Well, employees in general have more access to
14 systems than people who don't work at a facility.
15 And I think this is referring to the idea one of
16 the threats that is mentioned in the patent, that
17 even a rogue employee with physical access needs to
18 be protected against.
19 ATTORNEY LOWENSTEIN: Greg, just to give
20 you a heads up, Mr. Elliott needs to be away from
21 his desk for about 30 minutes starting in about
22 three minutes or so. So we can take our lunch
23 break so -- you can finish your line of
24 questioning, but --

1 ATTORNEY NIEBERG: Yeah. Let me see.
2 Yeah, let's take a break now then. That's fine
3 with me.
4 (Off the record at 2:57 p.m.)
5 (Back on the record at 3:33 p.m.)
6 BY ATTORNEY NIEBERG:
7 Q. Welcome back. I'll ask again.
8 Did you speak to anyone about your
9 testimony during break?
10 A. No.
11 Q. Okay.
12 You have your '854 declaration, correct?
13 A. I do.
14 Q. And page 25, you can turn to that.
15 A. Okay.
16 Q. At the bottom of that, you have a Figure 21 of the
17 '854 patent that you annotated, correct?
18 A. Right.
19 ATTORNEY LOWENSTEIN: Objection.
20 BY ATTORNEY NIEBERG:
21 Q. Well, there's -- on page 21 of your '854
22 declaration, there's an annotated Figure 21; is
23 that correct?
24 A. Yes.

1 Q. Did you add these annotations?
2 A. I don't recall if it was me.
3 Q. Do you agree with the annotations shown on page 25
4 of your '854 declaration?
5 A. Yes.
6 Q. Okay.
7 At the very bottom, you -- the
8 annotations are in orange and it says,
9 non-cryptographic step. Do you see that?
10 A. Yes.
11 Q. And it's referring to the obfuscate step. Do you
12 see that?
13 A. Yes.
14 Q. What did you mean by "non-cryptographic step"?
15 A. So the idea is that putting share N with a key
16 other than key N, meaning that the key number and
17 the encrypted share number don't match together, is
18 not a cryptographic protection. That's an
19 obfuscation.
20 Q. Why is that not cryptographic protection?
21 A. The step of taking those and putting them together
22 is not a cryptographic operation.
23 Q. Well, why is it not a cryptographic operation?
24 A. Because you're not performing a cryptographic

1 function to complete that step.
2 Q. What do you mean by "cryptographic function"?
3 A. Like, encryption, hashing, digital signatures,
4 they're -- you know, I think it's understood in the
5 art of what a cryptographic operation is, a
6 function that uses a cryptographically hard
7 assumption, and this step didn't involve that.
8 Q. What do you mean by "cryptographically hard
9 assumption"?
10 A. So in cryptography, we say that something is hard
11 based on a hardness assumption, like taking a
12 discrete log or reversing a hash function or
13 reversing an encryption without the key. So
14 whenever you have a cryptographic function, it's
15 based on some hardness assumption.
16 Q. Are you done?
17 A. Yeah.
18 Q. Well, what do you mean by a "hardness assumption"?
19 A. It's a standard technical term. It means that
20 you're assuming that a particular operation can't
21 be done in polynomial time, that it's hard. So
22 if -- you know, if you want to protect information
23 and you use, say, an Advanced Encryption Standard
24 or RSA or something like that, each of those is

1 based on some hardness assumption, and that's
2 standard in the cryptographic literature as to what
3 makes something a cryptographic function.
4 Q. Does the '854 patent describe any of that?
5 ATTORNEY LOWENSTEIN: Objection; scope.
6 THE WITNESS: I don't think the '854
7 goes into the mathematical level of detail of what
8 a cryptographic function is, but it's generally
9 understood in the field what functions are
10 cryptographic and which ones are not.
11 BY ATTORNEY NIEBERG:
12 Q. What do you mean by "cryptographic function"?
13 A. Which part don't you understand?
14 Q. Well, what's the distinction between a
15 cryptographic function and a non-cryptographic
16 function?
17 A. A cryptographic function is using cryptography, and
18 a non-cryptographic function is not.
19 Q. Why would you choose one over the other?
20 ATTORNEY LOWENSTEIN: Objection; form,
21 scope.
22 Well, actually, I'll withdraw the scope
23 objection.
24 I'll say objection to form.

1 THE WITNESS: I suppose depending on the
2 constraints of your problem.
3 BY ATTORNEY NIEBERG:
4 Q. What do you mean by "constraints of your problem"?
5 A. So, for example, let's say that I'm on a very
6 low-powered smart card and every single operation
7 is a computational cost that is -- affects my
8 ability to use that smart card correctly, so I
9 might decide not to use a cryptographic operation
10 because those are computationally intensive and so
11 I might use a non-cryptographic. That's just one
12 example I just thought of, like why you would use
13 one or the other.
14 Q. Why is a cryptographic operation computationally
15 intensive?
16 A. Typically, they are -- well, they're always
17 computationally intensive because they would
18 otherwise -- any function that you would be able to
19 easily reverse or to compromise the cryptography
20 would render the cryptography -- sorry -- render
21 the cryptography useless. So, for example, public
22 key operations can be very slow on slow processors.
23 Q. So depending on how much computational power you
24 have, that will be a factor in which cryptographic

1 process you select?
2 A. I've worked on applications where that was the
3 case. That is definitely a possibility.
4 Q. Was that in the prior art?
5 A. What do you mean?
6 Q. Well, was it known as of 2004, 2005?
7 A. That cryptographic operations are computationally
8 intensive?
9 Q. Yes.
10 A. Yes.
11 Q. Are non-cryptographic operations not
12 computationally intensive?
13 A. Some are. Factorial is computationally intensive
14 and exponentiation is computationally intensive,
15 but addition is not.
16 Q. By "factorial" you mean like four factorial is four
17 times three times two; is that what you mean?
18 A. Yes.
19 Q. Times one.
20 So some non-cryptographic protection can
21 be computationally intensive, but some may not be;
22 is that correct?
23 A. Yes.
24 Q. But cryptographic protection is always

1 computationally intensive?
2 A. Well, everything is relative. I mean, if you're
3 talking about performing a symmetric key encryption
4 on a super computer, then it's probably not going
5 to be your bottleneck. But if you're talking about
6 a mobile device, for example, and using public key
7 encryption, then it probably will be.
8 Q. And back to the Figure 21 on page 25 of your '854
9 declaration. That is an example of a
10 non-cryptographic protection; is that correct?
11 ATTORNEY LOWENSTEIN: Objection.
12 Objection; form.
13 THE WITNESS: So the idea of putting the
14 encrypted data with a portion of a key or with a
15 key that was not used to protect it is a
16 non-cryptographic security step.
17 BY ATTORNEY NIEBERG:
18 Q. Why would you use a non-cryptographic security step
19 if cryptographic security steps are available?
20 A. If you're going to be doing it in addition to
21 providing cryptographic protection, then -- then it
22 could be useful.
23 Q. I'm sorry.
24 So using non-cryptographic protection

1 could be useful when you're combining it with
2 cryptographic protection?
3 A. Everything is layers in security. So you have a
4 layer of protection, which is the encryption, and
5 you can add a layer of protection, which is
6 obfuscation of putting things in separate.
7 And we say that in security you want to
8 provide defense in depth, meaning the more layers
9 of security you have, the better.
10 Q. Does the '854 patent describe that principle of
11 having more layers of security, the better?
12 A. The '854 talks about a multilayer encryption
13 scheme, which is a version of defense in depth.
14 Q. Where does it talk about that?
15 A. Column 65, line 61.
16 Q. 65, line 61?
17 A. Yes.
18 Q. What are you referring to there?
19 A. For example, the encryption steps may in one
20 embodiment be repeated to produce a multilayered
21 encryption scheme. In addition, a different
22 encryption algorithm or combination of encryption
23 algorithms may be used in repeat encryption steps,
24 such that different encryption algorithms are

1 applied to the different layers of the multilayered
2 encryption scheme.
3 Q. And in your view that is a teaching to use multiple
4 layers of encryption; is that what you're saying?
5 A. I think it's saying that as an example of an
6 embodiment is to use multiple levels of encryption
7 and perhaps different algorithms at different
8 layers.
9 Q. But that's teaching to use multiple layers of
10 encryption, correct?
11 ATTORNEY LOWENSTEIN: Objection; form.
12 THE WITNESS: So this section over here
13 is talking about an embodiment of a multilayered
14 encryption scheme, which is multiple levels of
15 encryption.
16 BY ATTORNEY NIEBERG:
17 Q. What are the multiple levels of encryption that the
18 patent describes?
19 A. Well, in this paragraph, it talks about using a
20 different algorithm or combination of encryption
21 algorithms in repeated encryption steps so that
22 different encryption algorithms are applied at
23 different layers.
24 Q. What does that mean to use a different encryption

1 algorithm?
2 ATTORNEY LOWENSTEIN: Sorry. What was
3 the question? I missed it.
4 BY ATTORNEY NIEBERG:
5 Q. What does it mean to use a different encryption
6 algorithm?
7 A. So, for example, you could encrypt with the DES
8 algorithm, stands for Data Encryption Standard, and
9 then you could encrypt with an AES, which is the
10 Advanced Encryption Standard. And then you could
11 pick another algorithm, there's one, it's a strange
12 name, but it's called Blowfish, and you could use
13 the Blowfish algorithm.
14 Q. And this is teaching to use all three or
15 potentially use all three?
16 ATTORNEY LOWENSTEIN: Objection; form.
17 THE WITNESS: Well, you asked me for
18 examples. I mean, this isn't specifying any
19 particular algorithm. It's just saying that you
20 could use a combination of them or you could layer
21 them.
22 BY ATTORNEY NIEBERG:
23 Q. And do those different encryption algorithms use
24 different encryption keys?

1 A. Yes.
2 Q. And you mentioned DES as one example, right?
3 A. Yes.
4 Q. And that was a prior art encryption technique?
5 A. Came out in mid-70s.
6 Q. Predates me.
7 A. Not me, unfortunately.
8 Q. We're probably pretty close.
9 And then AES, was that also a prior art
10 encryption technique?
11 ATTORNEY LOWENSTEIN: Objection; scope.
12 THE WITNESS: Well, I'm not sure what
13 year AES came out, but I think it was the late
14 '90s. I'd have to check on that.
15 BY ATTORNEY NIEBERG:
16 Q. I believe the patent, the '854 patent, refers to
17 AES. We could find an example, but I'll represent
18 that is mentioned in the patent.
19 A. Okay.
20 Q. Okay. And if it is, if I'm correct, does that tell
21 you that it's a prior art encryption technique?
22 A. Yes.
23 Q. These inventors didn't invent DES, correct?
24 A. They did not.

1 Q. And these inventors didn't invent AES, correct?
2 A. Correct.
3 Q. And I believe the patent also refers to Triple DES,
4 that's another prior art encryption technique?
5 A. Yes.
6 Q. And these inventors didn't invent Triple DES,
7 correct?
8 A. Correct.
9 Q. So you mentioned before computationally intensive,
10 so is there a ranking of computationally
11 intensiveness between DES, Triple DES, and AES?
12 A. Yes.
13 Q. And what would that ranking be?
14 A. It would depend on whether you were doing it in
15 software or in hardware. DES was designed to run
16 on hardware. It's actually pretty slow on
17 software. And AES was designed to run on software.
18 So you get less benefit from hardware, but it's
19 faster than software.
20 Q. And what about Triple DES?
21 A. That's just running DES three times, so it's if you
22 do it in hardware, that's a linear increase. It's
23 very small.
24 Q. Why would you do DES three times?

1 A. Because the keys were only 56-bit runs in DES and
2 eventually computational power got so good that
3 they could exhaustively search the key space for
4 DES.
5 And so what they did is they run DES
6 forward and then backwards and then forward again
7 with different keys, and that gives you an
8 effective key space of 97 bits.
9 Q. Well, for DES, the bit space was 56 bits; is that
10 what you're telling me?
11 A. Yes.
12 Q. How many different encryption keys are there with
13 56 bits?
14 ATTORNEY LOWENSTEIN: Objection; scope.
15 THE WITNESS: Two to the 56.
16 BY ATTORNEY NIEBERG:
17 Q. Okay. So even with two to the 56 different
18 encryption keys, that was not sufficient security?
19 A. It was in the '70s and '80s and maybe '91, '92.
20 But in '93, I believe, it was broken. And somebody
21 built a computer in their home that was fast enough
22 to crack DES exhaustively. By today's standard,
23 it's not secure at all.
24 Q. So is the more computationally intense the

1 algorithm is the more secure it is?
2 A. Well, it's a factor. It depends on whether there's
3 a shortcut to breaking the security of it.
4 Some algorithms, the only known
5 technique for breaking it is to exhaustively search
6 through the key space. Other ones, people have
7 come up with shortcuts, where the amount of effort
8 to break it is less.
9 Q. Okay. So the less effort it takes to break the
10 security the less secure it is?
11 A. Yes.
12 Q. And is it fair to say all other things being equal,
13 the more computationally intense an algorithm is
14 the more secure it is?
15 A. I wouldn't say that's fair.
16 Q. Okay.
17 A. I would say it's the other way around, that the
18 more computation required to break the algorithm
19 the more secure it is.
20 Q. Okay. So it's from the perspective of breaking it
21 rather than creating it; is that the distinction
22 you're making?
23 A. Well, the way you asked it, I could come up with a
24 really, really computationally intensive function

1 that had zero security. So it doesn't mean that
2 just because something is computationally intensive
3 that it's secure.
4 Q. Okay. Is it -- is something that's low
5 computationally intensive generally less secure?
6 A. I mean, I think that's a nuanced question. I think
7 that if -- if you're comparing crypto algorithms
8 and you have one that's less computationally
9 intensive than, say, AES, then I would be suspect
10 that -- that it's as secure as AES, but not --
11 there's not a total ordering of encryption function
12 based on their computational complexity.
13 Q. Are you aware -- or was a person of skill aware of
14 any non-cryptographic protection that would have
15 been as secure as AES in the time of filing patent?
16 ATTORNEY LOWENSTEIN: Objection; scope.
17 THE WITNESS: Can I hear that again,
18 please?
19 BY ATTORNEY NIEBERG:
20 Q. Yes. Would the person of skill in the art, would
21 they have been aware of any non-cryptographic
22 protection that would have been as secure as AES in
23 the prior art?
24 ATTORNEY LOWENSTEIN: Objection; scope,

1 form.
2 THE WITNESS: I haven't considered that.
3 BY ATTORNEY NIEBERG:
4 Q. So back to your page 25 of your '854 declaration.
5 So that's a non-cryptographic
6 obfuscation, correct?
7 A. It's a non-cryptographic step, and it's an
8 obfuscation, yes.
9 Q. Would a person skilled in the art think that is a
10 computationally intense obfuscation?
11 ATTORNEY LOWENSTEIN: Objection; form,
12 scope.
13 THE WITNESS: I don't think that the
14 step would be computationally intensive.
15 BY ATTORNEY NIEBERG:
16 Q. And I think, as we talked about before, it's simple
17 math, right?
18 A. I don't even think it's really involving a lot of
19 math. You're just putting something with other
20 things and not putting it with other things.
21 Q. Does the non-cryptographic step violate -- let me
22 take a step back.
23 You're aware of Kerckhoffs's Principle?
24 A. Yes.

1 Q. Does the non-cryptographic step violate
2 Kerckhoffs's Principle?
3 A. Kerckhoffs's Principle basically says that you
4 should not put your security in anything other than
5 the keys. And so obfuscating -- performing an
6 obfuscation is a -- is not putting the protection
7 in the keys, so I would say this does not on its
8 own provide security --
9 Q. Okay.
10 A. -- based on Kerckhoffs.
11 Q. Does Kerckhoffs say that -- let me take us back.
12 So Kerckhoffs's Principle says you
13 should not put security in anything other than the
14 keys, correct?
15 A. That's part of it. It also says your algorithms
16 should be public, and the attacker should know
17 exactly what you're doing, and you should still be
18 secure if your keys are secure.
19 Q. Sorry. Give me one moment. I have a couple of
20 follow-ups on Kerckhoffs's Principle.
21 So does Kerckhoffs's Principle say that
22 you would not want to use security -- strike that.
23 Does Kerckhoffs's Principle say you
24 cannot use security that isn't based on a key?

1 A. Kerckhoffs's Principle doesn't say you can or can't
2 do anything. It says that as a guideline, you
3 should put your security in the keys and not in the
4 hiding of your algorithms.
5 Q. Okay. I don't want to get into too much more
6 details of Kerckhoffs's Principle. I probably
7 reached my limit.
8 You looked at Claim 1 of the '854
9 patent. It would actually help if you have both
10 the '854 and '609 patents near you, the claims.
11 A. Okay. Take me a minute to get that out.
12 Q. So I think part of this agreement, but we'll find
13 out, the '854 patent has a data set, correct; Claim
14 1 of the '854 patent is a data set, correct?
15 A. Yes.
16 Q. And then you -- one of the steps is distributing
17 the data set into a plurality of shares, correct?
18 A. Yes.
19 Q. And then the shares are each encrypted with a
20 respective distinct encryption key, correct?
21 A. Yes.
22 Q. And then the encrypted shares in Claim 1 of the
23 '854 patent are called -- an encrypted share in the
24 '854 patent is called a data chunk; is that

1 correct?
2 ATTORNEY LOWENSTEIN: Objection; scope.
3 THE WITNESS: If you look, it says it's
4 performing an encryption operation to secure the
5 plurality of data chunks. So it's -- there are
6 shares and chunks whether they're before the
7 encryption and after the encryption.
8 BY ATTORNEY NIEBERG:
9 Q. Well, let me see if I understand that.
10 Is the data chunk something that has
11 been encrypted with a distinct key?
12 ATTORNEY LOWENSTEIN: Objection; scope.
13 BY ATTORNEY NIEBERG:
14 Q. Well, I'll strike that question.
15 What is the distinction of Claim 1 of
16 the '854 patent between a share and a data chunk?
17 ATTORNEY LOWENSTEIN: Objection; scope.
18 THE WITNESS: I believe they are used
19 pretty much interchangeably.
20 BY ATTORNEY NIEBERG:
21 Q. So in your opinion, when Claim 1 refers to a share
22 and a data chunk, it's referring to the same thing?
23 ATTORNEY LOWENSTEIN: Objection; scope.
24 THE WITNESS: Can I hear that again,

1 please?
2 BY ATTORNEY NIEBERG:
3 Q. Is it your opinion that Claim 1 of the '854 patent
4 uses the term "share" and "data chunk"
5 interchangeably?
6 ATTORNEY LOWENSTEIN: Objection; scope.
7 THE WITNESS: I -- I don't believe I set
8 out any opinions specifically on that in my report,
9 but that is how I read these claims -- this claim.
10 BY ATTORNEY NIEBERG:
11 Q. So in your opinion, the Claim 1 uses two different
12 terms referring to the same thing?
13 ATTORNEY LOWENSTEIN: Objection; scope.
14 THE WITNESS: I wouldn't say that. In
15 order to provide, you know, that type of claim
16 instruction information, I would want to study this
17 some more, but, in essence, it's referring to the
18 pieces that have been split off from the original
19 data set when it's referring to data chunks and
20 when it's referring to shares.
21 BY ATTORNEY NIEBERG:
22 Q. You have the '609, Claim 1 in front of you, as
23 well, right?
24 A. Yes.

1 Q. Let me get it myself. I've got to remember this
2 correctly.
3 Claim 1 of the '609 refers to shares,
4 correct? I apologize. Strike that.
5 Claim 1 of '609 refers to data chunks;
6 is that correct?
7 A. Yes.
8 Q. And then it refers to -- well, then it encrypts
9 data chunks; is that correct?
10 A. Yes.
11 Q. Okay. Is there any difference between the data
12 chunk in Claim 1 of the '609 patent and the share
13 in Claim 1 of the '854 patent?
14 ATTORNEY LOWENSTEIN: Objection; form,
15 scope.
16 THE WITNESS: I haven't -- I haven't
17 found that analysis.
18 BY ATTORNEY NIEBERG:
19 Q. You have no opinions sitting here today whether
20 there's a difference between the '609 patent's
21 claim data chunk and the '854 patent's claim share?
22 ATTORNEY LOWENSTEIN: Objection; form,
23 scope.
24 THE WITNESS: I don't offer any opinion

1 in my report saying the data chunks of Claim 1 of
2 the 609 and the data shares of the '854 patent,
3 whether they're the same or not, because I haven't
4 analyzed that. So I won't offer that opinion.
5 BY ATTORNEY NIEBERG:
6 Q. You reviewed the petition, correct?
7 A. Yes.
8 Q. I'm sorry. You reviewed all the petitions,
9 correct?
10 A. All three.
11 Q. I think you have -- do you have a copy of the '854
12 petition?
13 A. Yes. Sorry. This binder fell.
14 Q. Okay. It's paper 2 in the '854 proceeding.
15 A. I have it in my handout.
16 Q. Okay. Give me one moment.
17 Actually, it's probably in there, but
18 it's probably easier. Did you review Dr.
19 Bhattacharjee's declaration in preparing your
20 declaration?
21 A. Yes.
22 Q. Okay. I don't think you have a hard copy of any of
23 his declarations, so I'm going to put into a chat a
24 copy of Dr. Bhattacharjee's declaration for the

1 '609 patent.
2 A. '609, okay.
3 Q. Yes, I'll do that. One moment. Let me know when
4 you have it.
5 A. I have it up.
6 Q. If you go to page -- native page 37, which is page
7 44 in the Adobe file. It might not be what I want.
8 Strike that. Hold on. Apologies.
9 Go to page 21 native, which is page 28
10 of the PDF. Are you there?
11 A. I am on page 21, yes. So with a 1 at the bottom of
12 the page?
13 Q. As a footnote at the bottom.
14 A. No, the page number on the document is 21.
15 Q. Correct. And it has a footnote 1 at the bottom of
16 the page?
17 A. Yes.
18 Q. So Dr. Bhattacharjee noted that the claims of the
19 '609 and '854 patent both recite the term "data
20 chunks," but the term is used differently in each
21 claim set.
22 For the '609 patent, data chunks are
23 generated based on a data set and the data chunks
24 are encrypted with respective encryption keys.

1 In the '854 patent, the data set is
2 first distributed into shares, and the data chunks
3 are then generated by encrypting each share with a
4 respected encryption key.
5 In other words, the '609 patent's claim
6 data chunks are what the '854 patent's claims call
7 shares.
8 Do you see that?
9 A. I see that.
10 Q. Did you disagree with that --
11 ATTORNEY LOWENSTEIN: Objection; scope.
12 BY ATTORNEY NIEBERG:
13 Q. -- opinion anywhere?
14 ATTORNEY LOWENSTEIN: Objection; scope.
15 THE WITNESS: This is the '609?
16 BY ATTORNEY NIEBERG:
17 Q. The '609 declaration, correct.
18 A. Can you give me a searchable copy of my '609
19 declaration?
20 Q. Is the one I gave you, do you have that or no?
21 A. You gave me the '854.
22 Q. Okay.
23 ATTORNEY LOWENSTEIN: I think it's
24 earlier up in that shot.

1 THE WITNESS: Okay. I have it.
2 BY ATTORNEY NIEBERG:
3 Q. I think I labelled it '609, Exhibit 2033, at 11:08
4 a.m.
5 A. I think I have it. Yes, you put it -- no, that's
6 Bhattacharjee.
7 What exhibit number is that?
8 Q. 2033.
9 A. Okay.
10 ATTORNEY LOWENSTEIN: He has it labeled
11 '609, Exhibit 2033.
12 THE WITNESS: Yes, I've got it. Okay.
13 So just give me a moment.
14 So I'm just going to tell you I had
15 everything closed, but I opened up a chat and wrote
16 to my wife please keep it down because she's on the
17 phone. I don't know if you guys can hear it or
18 not.
19 BY ATTORNEY NIEBERG:
20 Q. I cannot.
21 A. Okay.
22 So I don't see anywhere in my
23 declaration that I addressed that and in which case
24 I don't have an opinion that disagrees with that.

1 But if it's in my declaration and I missed it, the
2 declaration will speak for itself.
3 Q. And before you testified that in the '854 patent's
4 Claim 1, the term "share" and "data chunk" refer to
5 the same thing, correct?
6 ATTORNEY LOWENSTEIN: Objection; form.
7 THE WITNESS: I said that the terms are
8 pretty much used interchangeably, but that I have
9 not really studied that question.
10 BY ATTORNEY NIEBERG:
11 Q. Wouldn't it be confusing to a person of skill to
12 use different words to mean the same thing?
13 ATTORNEY LOWENSTEIN: Objection; scope.
14 THE WITNESS: I don't know. I don't
15 have any trouble understanding it.
16 BY ATTORNEY NIEBERG:
17 Q. But you're a person beyond -- your skill level is
18 beyond a person of ordinary skill, correct?
19 A. Yes. I don't see that a person of skill in the art
20 would have trouble understanding this.
21 Q. Now, if we could turn to the '116 declaration,
22 which is in the chat probably right at the --
23 underneath the one you just opened.
24 A. All right.

1 Q. And if you don't have a copy of '116, electronic
2 copy of the '116 patent, I'll drop it to you.
3 A. I have it now. It's open.
4 Q. Do you have both the patent and your declaration?
5 A. Oh, the patent? I can get that out of the binder.
6 Q. Okay. I'll drop in an electronic copy, as well, in
7 case it's helpful. It would also be helpful if you
8 have handy the Tajima reference. I'll also drop
9 that into the chat for potential convenience. So
10 in the '116 patent proceeding, Tajima is marked as
11 Exhibit 1105.
12 A. I got it. I found it. I have the hard copy in
13 here.
14 So I have the '116, I have Tajima, and
15 on the screen I have my declaration for the '116.
16 Q. All right. You probably don't need the '116 patent
17 but, you know, you can put it aside, but it's there
18 if you do need it.
19 You reviewed the Tajima reference before
20 submitting your '116 declaration?
21 A. Yes.
22 Q. And Tajima describes a method for securing personal
23 information data; is that right?
24 A. Yes.

1 Q. And that's what it says, for example, in paragraph
2 44?
3 A. Of my report?
4 Q. No, 44 of Tajima, if you go there.
5 A. Oh, I'm sorry. It's not paper clipped very well,
6 so let me just fix it.
7 Forty-four, okay, on the last page.
8 Q. On page 3. Well, of Tajima, column -- paragraph
9 44. I apologize if I --
10 A. Yeah, I'm saying it's on the last page to make sure
11 I'm looking at the same thing.
12 Q. Last page of?
13 A. Thirteen of Tajima.
14 Q. Paragraph 44.
15 A. Oh, that's Claim 44.
16 Q. Okay.
17 A. My bad. Okay. Well, that's why I'm glad I asked.
18 Page 3, Summary of the Invention.
19 Q. Right. And paragraph 44 says, in part, the object
20 of the present invention is to provide a personal
21 information management system...that can improve
22 the security of personal information; is that
23 right?
24 A. Yes.

1 Q. Okay. So securing personal information?
2 A. That's what it says.
3 Q. What is personal information in the context of
4 Tajima?
5 A. I have this in my declaration. I'm sorry. I'm not
6 finding what I was looking for.
7 So the personal information could be
8 like an ID and a password.
9 Q. And is that a type of data?
10 A. That is data.
11 Q. If you looked at Figure -- Tajima's Figure 13 on
12 sheet 9, can you turn there?
13 A. Okay.
14 Q. And so Tajima shows -- well, what is being shown in
15 that first set of blocks in Figure 13?
16 A. You're talking about on the top?
17 Q. Yes, on the top of Figure 13. Well, there are six
18 white boxes without hash marks and then two boxes
19 with hash marks. Do you see that?
20 A. Yes.
21 Q. Do you know what those boxes are representing?
22 A. I'm sorry. Would you be able to upload the patent
23 so I can get it electronically? Did you already do
24 that?

1 Q. The Tajima patent?
2 A. Yes, please.
3 Q. Yes, it should be the last thing I uploaded.
4 A. Okay. Oh, this is not searchable. I can OCR it
5 really quickly if you don't mind.
6 Q. No, I don't. I'll do it, as well.
7 A. The copy I have does not appear to be very user
8 friendly, so if you have a searchable version of
9 this.
10 Q. One moment. I just have it now. I'm going to drop
11 in a smart version.
12 A. And I just found what I was looking for. Let me
13 see if I need it.
14 Q. Redundancy is useful.
15 A. Okay. So the top is showing the personal
16 information in the first non-shaded boxes followed
17 by information about the keys that were used to
18 encrypt that personal information.
19 Q. How many keys were used to encrypt the personal
20 information in that first block?
21 A. The first block was one in this figure.
22 Q. Well, let me be clear. So those six unshaded empty
23 boxes, that represents the personal information,
24 correct?

1 A. Yes.
2 Q. How many encryption keys encrypt that set of six --
3 the personal information, how many keys encrypt the
4 personal information in Tajima?
5 A. In this figure it's showing two.
6 Q. So it's your understanding there were two keys that
7 encrypted the personal information?
8 A. There are two keys used that are encrypting
9 portions of the personal information.
10 Q. Well, let me -- let me say this to you and see if
11 you agree with me.
12 I think what Tajima describes is that
13 the personal information is encrypted with one key
14 and then that one key gets divided up into the X
15 and Y along with the encrypted personal
16 information.
17 And if you look to paragraph 113 of Tajima, you could
18 read what's happening.
19 A. I'm sorry. I'm just going to read this more
20 carefully.
21 Q. Okay.
22 A. So in this paragraph it's not clear that there's
23 only one key because there's the encryption of the
24 whole personal information and then there's the

1 encryption of the two data fragments, and it says
2 the key that was used to encrypt X and then the key
3 that was used to encrypt Y, it's not clear to me
4 that those would be the same key.
5 Q. And I wasn't proposing they were the same key. But
6 in paragraph 113, it says, as yet another method of
7 dividing personal information as shown in Fig. 13,
8 personal information that the user of terminal 10
9 has submitted to certificate authority 40A is first
10 encrypted. Do you see that?
11 A. Right.
12 Q. So the personal information is first encrypted,
13 correct?
14 A. Right.
15 Q. And then it says, and the encrypted personal
16 information and information on the key that was
17 used in encrypting the personal information are
18 then divided into a plurality of data portions. Do
19 you see that?
20 A. Yes.
21 Q. So what I think it's saying, and correct me if I'm
22 wrong, is that the personal information is
23 encrypted by one key?
24 A. Initially, yes.

1 Q. Okay. So it's initially encrypted by one key?
2 A. Right.
3 Q. Okay. And then if you turn to Figure 13. Are you
4 there?
5 A. Yes, I'm there.
6 Q. So it shows the six unshaded boxes, that's the
7 personal information that's been encrypted?
8 A. Right.
9 Q. And there are two boxes with hash marks to the
10 right of it. Do you see that?
11 A. Yes.
12 Q. And that's the key that encrypted the personal
13 information?
14 ATTORNEY LOWENSTEIN: Objection to form.
15 THE WITNESS: I don't think so. I think
16 that's information about the key.
17 BY ATTORNEY NIEBERG:
18 Q. Okay. So in your opinion, that's information about
19 the -- the one key that was used to encrypt the
20 personal information?
21 ATTORNEY LOWENSTEIN: Objection; form.
22 THE WITNESS: That's not what's
23 described in paragraph 113.
24 What is described here is information

1 about the two keys that are used to encrypt the
2 fragments X and Y.
3 BY ATTORNEY NIEBERG:
4 Q. Let's start with -- look at it again, 113 Tajima.
5 A. Okay.
6 Q. It says the personal information is first
7 encrypted, right; do you see that?
8 A. Yes.
9 Q. And the encrypted personal information and
10 information on the key that was used in encrypting
11 the personal information are then divided into a
12 plurality of data portions. So what's being
13 divided --
14 A. I see it.
15 Q. So let me ask again. In Figure 13 there's
16 encrypted personal information and key information
17 on the key that was used in encrypting the personal
18 information, correct?
19 ATTORNEY LOWENSTEIN: Objection.
20 THE WITNESS: I'm sorry. Go ahead,
21 Nate.
22 BY ATTORNEY NIEBERG:
23 Q. And the key information of that first key is shown
24 by the two hash marks in Figure 13, correct?

1 ATTORNEY LOWENSTEIN: Objection; form.
2 THE WITNESS: When you say the two boxes
3 that are shaded?
4 BY ATTORNEY NIEBERG:
5 Q. Yes.
6 A. That represents information about the key that was
7 used to encrypt the personal information.
8 Q. And if you look to Figure 11, it has a very similar
9 figure, and it calls those two boxes key
10 information. Do you see that?
11 A. Yes.
12 Q. And Figure 13, it's just left out that label. Do
13 you see that?
14 A. The label is not there.
15 Q. Right. But the key information is what those two
16 hash marks are in Figure 13, correct?
17 A. I think that's what is explained in the text, and I
18 believe that's the case.
19 Q. Okay. And so then the encrypted personal
20 information and the key information that was used
21 to encrypt the personal information are divided up
22 into the X and Y; is that correct?
23 ATTORNEY LOWENSTEIN: I'm sorry. I
24 missed the question. Can you say it again, please?

1 ATTORNEY NIEBERG: Sure.
2 BY ATTORNEY NIEBERG:
3 Q. So that first set of eight blocks in Figure 13, do
4 you see that?
5 A. Yes.
6 Q. Six that are unshaded, two that are hashed shaded?
7 A. Right.
8 Q. Okay. All of that data is divided up into the
9 unshaded X and the unshaded Y, correct?
10 A. That's my understanding of how this works.
11 Q. And then the X is encrypted with an encryption key,
12 correct?
13 A. Yes.
14 Q. And then the Y is encrypted with an encryption key,
15 correct?
16 A. Yes.
17 Q. And then the encrypted X is stored with key
18 information of Y, correct?
19 A. Yes.
20 Q. And encrypted Y is stored with key information of
21 X, correct?
22 A. Yes.
23 Q. So you said before that -- and in your opinion, the
24 key information is not the key itself; is that

1 correct?
2 A. Right.
3 Q. What is it?
4 A. Did you put a searchable copy in?
5 Q. I think I did.
6 A. Okay.
7 ATTORNEY LOWENSTEIN: Can we take a
8 break when you finish this line of questioning?
9 ATTORNEY NIEBERG: You want to take a
10 break now?
11 ATTORNEY LOWENSTEIN: No, finish your
12 module, then we will.
13 ATTORNEY NIEBERG: Okay. I'm less
14 modular than the patent.
15 BY ATTORNEY NIEBERG:
16 Q. So the record is clear, the pending question is,
17 what is Tajima's key information?
18 A. It's information about the key. For example, where
19 it's located or something like that could be an
20 index into a table. I don't think Tajima explains
21 exactly what it is.
22 Q. Is it your opinion that it cannot be the key
23 itself, or is it your opinion that Tajima doesn't
24 tell you whether it's the key or not?

1 A. It is my opinion that it cannot be the key. I have
2 an explanation of that in my declaration, where I
3 talk about the fact that when Tajima wants to talk
4 about a key, it talks about the key, and here it
5 says information about the key.
6 Q. So in your opinion, the reason why key information,
7 or information about the key, cannot be the key is
8 because he just -- because he doesn't say it's the
9 key. Is that it?
10 A. Well, let me find the section in my report because
11 I address this where there are times in Tajima when
12 a key is referred to and Tajima says a key. So
13 Tajima shows that it's capable of referring to a
14 key as a key and key information is something else.
15 Let me try to find that section. I'm in
16 the wrong.
17 Q. Let's go to paragraph 46 of your '116 declaration.
18 A. Okay. Yeah, I was in the wrong.
19 ATTORNEY LOWENSTEIN: That's not the
20 paragraph he was looking for. I can help if you'd
21 like.
22 ATTORNEY NIEBERG: Well, let's give him
23 a shot.
24 We're at paragraph 42 of your '116

1 declaration. Go there.
2 THE WITNESS: Okay. So that's pretty
3 much what I said, that Tajima refers to a key when
4 it means a key, and information regarding a key
5 refers to information regarding a key, not the key
6 itself.
7 BY ATTORNEY NIEBERG:
8 Q. Did you cite any other evidence of why the key
9 information could not be the key itself?
10 A. Well, I talk in paragraph 48 about the precision
11 required in cryptography and that you can't just
12 modify a system or something that you're referring
13 to, so I have several paragraphs of explanation of
14 that.
15 Q. Okay. Well, let's unpack that a little.
16 So you said before that the key
17 information could be something like an index to
18 where the key is stored; is that correct?
19 A. Well, I -- you know, I probably shouldn't make up
20 examples on the fly here. I was just thinking
21 about what would -- what would be key information,
22 and that's something that occurred to me. But I
23 don't believe I'm offering that example up in my
24 report.

1 Q. But it has to be something -- well, let's take a
2 step back.
3 There is an encryption key, correct?
4 A. There is.
5 Q. And it has to be stored somewhere, right?
6 A. It does.
7 Q. So if Tajima is not storing its encryption keys
8 with the data, the encryption keys are being stored
9 somewhere else?
10 A. I think that would make sense.
11 Q. And so -- but Tajima doesn't tell you about where
12 the keys are stored; is that correct?
13 A. It doesn't go into that detail.
14 Q. So it's your opinion, though, that a person skilled
15 in the art would know that there must be some
16 storage system that's storing Tajima keys?
17 A. I think that that is a natural conclusion short of
18 there being like smart cards with keys on them or
19 keys derived from passwords, but, in general, I
20 think what it's saying, that there's some storage
21 somewhere of the keys.
22 Q. And so that would mean then for Tajima to -- so
23 let's take a -- how would that work? So Tajima has
24 a key and encrypts the data, right?

1 A. Right.
2 Q. Then it generates some key information about the
3 key, correct?
4 A. Not necessarily in that order. It might store the
5 keys first and then generate the key information so
6 that it can be found.
7 You know, we're assessing hypotheticals
8 here and there are multiple ways. I don't want to
9 limit it to what -- you know, the particular
10 example you're giving.
11 Q. Well, let's talk about this example. I want to
12 understand how it works, and we can talk about
13 other ways if you think that would be fruitful.
14 So the example you gave is the keys are
15 stored somewhere. So it encrypts the data with a
16 key, correct?
17 A. So Tajima does describe encrypting the data with a
18 key.
19 Q. Okay. And then at some point it must store that
20 key somewhere, right?
21 A. Or derive it.
22 Q. Or derive it.
23 So in the example where it stores it
24 somewhere, what you said is one of the known ways,

1 it would also have to have some kind of index to
2 know where that key is stored, correct?
3 ATTORNEY LOWENSTEIN: Objection; scope.
4 THE WITNESS: I mean, I'd have to look
5 at the system you're describing, but it's short of
6 including information -- I would say this, an index
7 would be one way to do it.
8 BY ATTORNEY NIEBERG:
9 Q. And then it has keys for the data fragments,
10 correct?
11 A. Right.
12 Q. And those keys would also have to be stored
13 somewhere, correct?
14 A. Unless they could be derived.
15 Q. What do you mean by "could be derived"?
16 A. So I'm going to give you an example of a system I
17 built many years ago. Would have been able to
18 satisfy this. And I'm not saying that's what
19 Tajima is saying. It's just you're asking me a
20 question.
21 So you could have one master key, and
22 then you could encrypt the numbers one, two, three,
23 four, five, et cetera, and the result of that could
24 be used to produce a key because the cybertext from

1 that encryption could be random, and so information
2 about the key could just be what's the index, and
3 then you could have a master key.
4 So this would be a system that wouldn't
5 involve storing these individual keys anywhere.
6 They could just be derived. I'm not saying this is
7 disclosed. I'm answering your question.
8 Q. So one option is the keys could be derived, but you
9 would need some kind of intelligence for how to
10 recover the keys when you need them?
11 A. Not intelligence.
12 ATTORNEY LOWENSTEIN: Objection; scope.
13 THE WITNESS: It wouldn't be
14 intelligence. You just need -- so to say that the
15 key information that is in Figure 13 is just what
16 is the index. Let's say it's the number 12. And
17 then you would take the master key and encrypt 12,
18 and the cybertext that resulted would be the key
19 that corresponded to the key information that was
20 there.
21 BY ATTORNEY NIEBERG:
22 Q. And where is the key itself?
23 A. It's derived --
24 ATTORNEY LOWENSTEIN: Objection; form.

1 THE WITNESS: The key -- the master key?
2 BY ATTORNEY NIEBERG:
3 Q. The key that was used to encrypt the data.
4 A. Okay. So let's --
5 ATTORNEY LOWENSTEIN: Objection; form,
6 scope.
7 THE WITNESS: Yeah, we're getting way
8 off base from my report here, but...
9 BY ATTORNEY NIEBERG:
10 Q. Well, I disagree, because your report says that the
11 key information cannot be the key itself, right?
12 A. Yeah, it cannot.
13 Q. So it must be something, though, right?
14 A. Right.
15 Q. I want to know what you think a person skilled in
16 the art reading this patent would think that
17 something is if it's not the key?
18 A. So one skilled in the art I think would come up
19 with, you know, two potential things it could be,
20 and I'm sure there were others if I spent some time
21 thinking about it.
22 One of them is this idea of deriving a
23 key. And so if we look at Figure 13 and it says
24 key information of Y and the other one says key

1 information of X. So let's say that the key
2 information of Y that's stored is an integer there.
3 And I'll use the example 12 just for explanation.
4 And so the key information of X is 13.
5 You have a master key in the system.
6 One key. And you then encrypt the key information
7 of Y, that 12, with the master key, and you get a
8 cybertext. That's a result. You then use that as
9 the key for X.
10 And similarly for Y, it would be 13 in
11 this simplified example. You would encrypt 13 with
12 a master key, and that would be the key to encrypt
13 X.
14 So this is a very common technique.
15 It's called counter encryption. And it could be
16 used to derive -- one who is skilled in the art
17 would know this, but it would be used to derive
18 keys where the key information would be exactly
19 that index needed to give you the encryption key.
20 Q. You said there was -- that was one. What is the
21 other alternative?
22 A. Well, the other would be to have a data structure
23 and then to store an index to the data structure
24 containing keys in the key information.

1 Q. Would an alternative be to store the key itself
2 rather than something that's not the key itself?
3 A. In the database?
4 ATTORNEY LOWENSTEIN: Objection to form.
5 BY ATTORNEY NIEBERG:
6 Q. No, with the data.
7 A. Well, that's not what's described in Tajima.
8 Q. I'm not asking if you think that was described.
9 I'm asking if a person of skill would
10 know that's another option to store the key with
11 the data rather than something that's not the key?
12 A. I don't think so because, you know, reading Tajima,
13 they clearly state that it's information regarding
14 the key. So if they wanted to make a different
15 invention, maybe they could do that, but that's not
16 what's described in Tajima.
17 Q. Okay. But that's not what I'm asking.
18 I'm asking would a person skilled in the
19 art know that you could store -- rather than use
20 key information that you say is not the key, you
21 could store the key itself?
22 A. I would have to think about the security
23 implications of that. That is, I think,
24 inconsistent with the teachings of Tajima. So one

1 reading Tajima I don't think would think to do
2 that.
3 Q. We talked about Figure 21 of Orsini, right?
4 ATTORNEY LOWENSTEIN: Sorry. I asked
5 for a break.
6 ATTORNEY NIEBERG: Yes.
7 ATTORNEY LOWENSTEIN: Can we take a
8 break?
9 ATTORNEY NIEBERG: Ten minutes?
10 ATTORNEY LOWENSTEIN: Sure. Get back on
11 at 5:00.
12 - - -
13 (Whereupon, a brief recess was taken at
14 this time.)
15 - - -
16 BY ATTORNEY NIEBERG:
17 Q. I'll ask again. Did you talk to anybody about your
18 testimony during the break?
19 A. No.
20 Q. Before we took a break, we were talking about
21 Tajima, and you just said that there were a number
22 of different ways Tajima could be implemented to
23 manage the key information; is that correct?
24 A. I talked about how one of skill in the art might

1 structure the key information.
2 Q. And you said there could be many ways in which to
3 do that; is that correct?
4 A. I think I gave two examples.
5 Q. Okay. I think you also said there could be other
6 ways. Okay. So you gave two examples.
7 How would a person of skill in the art
8 decide between the possibilities?
9 ATTORNEY LOWENSTEIN: Objection; scope.
10 THE WITNESS: I haven't considered that.
11 BY ATTORNEY NIEBERG:
12 Q. Do you have an opinion about whether a person with
13 skill in the art would be able to investigate the
14 possibilities?
15 A. I think they would.
16 Q. Do you know what considerations they would take
17 into account when deciding how to implement it?
18 ATTORNEY LOWENSTEIN: Objection; form,
19 scope.
20 THE WITNESS: Yeah, I don't want to do
21 on the fly opinions on that.
22 BY ATTORNEY NIEBERG:
23 Q. I apologize for bouncing. I don't think I bounced
24 to this one yet.

1 Can you get your '609 declaration out?
2 See if I can find it. Do you have your
3 declaration?
4 A. I have the hard copy, and I was just looking --
5 Q. I think I sent it to you around whatever it was,
6 around 11 a.m. maybe?
7 A. I have it.
8 Q. Okay. So we're back to your '609 declaration,
9 Exhibit 2033. And if you turn to paragraph 112 on
10 page 69. Let me know when you're there.
11 A. Okay.
12 Q. And you wrote, fundamentally, in Foster's system,
13 computer system 400 is agnostic as to what the
14 recipients do with the content units, and --
15 A. I'm sorry. I found where you were. Okay.
16 Q. Let's try it again.
17 So you're on paragraph 112 of your '609
18 declaration?
19 A. Yes.
20 Q. Okay. And then the third sentence begins
21 "fundamentally." Do you see that?
22 A. Yes.
23 Q. All right. In Foster's system, computer system 400
24 is agnostic as to what the recipients do with the

1 content units, and, instead, the recipient
2 determines whether the content units are stored or
3 not. Do you see that?
4 A. Yes.
5 Q. So the recipients can determine to store the
6 content units; is that correct?
7 A. What I'm saying is the recipients can determine
8 whether to store it or not. The computer system
9 doesn't know anything about what the recipient is
10 going to do.
11 Q. But the content units can be stored at the
12 recipient, correct?
13 A. That's a possibility.
14 Q. And what do you mean by "computer system 400 is
15 agnostic as to what the recipients do"?
16 A. It doesn't have knowledge, opinion, of any
17 direction that it gives or anything. It's
18 completely detached from the decision that is made
19 at the recipient.
20 Q. Do computer systems usually have opinions?
21 A. Well, we often talk about them, like we say the
22 computer system knows something or, you know, it
23 thinks something when it knows certain data. So I
24 think that's what I was doing there.

1 Q. All right. Is there any claim limitation in the
2 '609 patent that refers to the processor not being
3 agnostic?
4 A. Looking at Claim 1, and can you repeat the
5 question?
6 Q. Yes.
7 Where does the claim say that the
8 processor can't be agnostic to what the recipient
9 does?
10 A. So the steps in Claim 1 are steps that are required
11 executing code by a processor to perform the
12 remaining elements. So, in particular, you would
13 have to execute code by processor to perform
14 storing in a memory coupled to the processor.
15 So the word "agnostic" does not appear
16 in the claims here, but in the Foster system, the
17 receiver is not running any -- you know, there's no
18 code running in here that performs anything on a
19 receiver. It's got to be on the system itself.
20 Q. What system are you referring to?
21 A. So executing code by a processor to perform -- and
22 I'll skip to the last one -- storing in a memory
23 coupled to the processor at least one data chunk of
24 the plurality of data chunks. So there's no code

1 executing on a processor in Foster to perform that
2 step.
3 Q. And my question is, where does the claim say that
4 the processor cannot be agnostic to what happens at
5 the storage device?
6 A. Well, the point I'm making by the agnostic comment
7 is that in Foster there are basically two systems.
8 And the instructions that are running on -- so I'm
9 looking at Figure 16 on page 68 of my declaration,
10 for example. The instructions running on CPU 406
11 do not say to store something on the receiver 430.
12 Q. So your opinion is that the processor in the claim
13 has to instruct the storage device to store?
14 A. Well, I mean, what the claim says, executing code
15 via processor to perform those first steps and then
16 to perform storing in a memory coupled to the
17 processor at least one data chunk, et cetera. So
18 it has to be code executed on the processor that
19 results in storing something on -- in memory that's
20 coupled to the processor.
21 In Foster, the, you know, set-top box
22 memory is not coupled to the processor.
23 Q. What do you think "coupled to" means?
24 ATTORNEY LOWENSTEIN: Objection; scope.

1 THE WITNESS: So I haven't given a
2 precise definition of "coupled to" in my
3 declaration, but, you know, broadly, it means that
4 it's -- it's connected to it.
5 BY ATTORNEY NIEBERG:
6 Q. How does the content get from Foster's system to
7 the recipient without a connection?
8 A. Well, it's not the recipient that's not coupled to
9 it. It's the storage, the hard disk, at the
10 recipient is not coupled to the CPU. The recipient
11 can decide to display it right away. It could
12 decide to store it. But the CPU doesn't have any
13 instructions that result in the receiver having to
14 store something.
15 Q. Well, I'm asking about "coupled to."
16 A. Sure.
17 Q. The content gets from Foster's processor to the
18 memory and the receiver, correct?
19 A. Yes.
20 Q. And how is that not coupled to it?
21 A. Because I wouldn't consider the hard disk at the
22 receiver to be coupled to the CPU because the CPU
23 doesn't have any instructions that -- that store
24 something on that -- on that hard drive.

1 Q. So in your opinion, "coupled to" requires
2 instructions from the processor to the storage
3 device?
4 ATTORNEY LOWENSTEIN: Objection; form.
5 THE WITNESS: I think "coupled to" has
6 to be taken within the context.
7 BY ATTORNEY NIEBERG:
8 Q. Okay. And in your opinion, the context of Claim 1
9 of the '609 says, coupled to requires instructions
10 from the processor to the memory?
11 ATTORNEY LOWENSTEIN: Objection; form.
12 THE WITNESS: That's not what I said.
13 BY ATTORNEY NIEBERG:
14 Q. Well, that's what I'm trying to figure out here.
15 But you don't dispute that the data gets
16 from the processor to the memory and the recipient,
17 correct?
18 ATTORNEY LOWENSTEIN: Objection; form.
19 THE WITNESS: So are you talking about
20 Foster right now?
21 BY ATTORNEY NIEBERG:
22 Q. Yes.
23 A. Okay. And the question is whether data goes from a
24 processor and can end up in the hard drive on the

1 receiver?
2 Q. Correct.
3 A. That is possible.
4 Q. Okay. And it follows a -- well, let's look at
5 Foster's figure, right? It goes from -- are you on
6 your page 68?
7 A. I am.
8 Q. Okay. So there's a CPU 406; that's the processor,
9 right?
10 A. Right.
11 Q. And then it's your data bus 410, right?
12 A. Right.
13 Q. And then the CPU is coupled to I/O interfaces 404.
14 Do you see that?
15 A. I see that.
16 Q. And it's coupled to a bunch of blocks, including a
17 transmission system 424. Do you see that?
18 A. I see that.
19 Q. And then it goes from the transmission system to
20 recipient 430, correct?
21 A. Correct.
22 Q. And it goes over some kind of data network,
23 correct?
24 A. Correct.

1 Q. So it goes from CPU through the bus to the
2 transmission system over a network to the
3 recipient, correct?
4 A. Right.
5 Q. And then from the recipient it goes to a source
6 device, correct?
7 ATTORNEY LOWENSTEIN: Objection; form.
8 THE WITNESS: There's nothing shown here
9 that that happens.
10 BY ATTORNEY NIEBERG:
11 Q. Well, if the recipient is going to store it, it
12 must have a storage device, right?
13 A. The recipient doesn't have to store it. The
14 recipient could display it and be discarding it as
15 it's being displayed on a TV.
16 Q. Okay. Could. But it could, also, as we said
17 before, could store it?
18 A. It's possible.
19 Q. And if it's storing it, it would have to have a
20 storage device, right?
21 A. Presumably if it stores it, it has a way to store
22 it.
23 Q. Where in that chain is the coupled -- where in that
24 chain does the processor stop being coupled to that

1 storage device?
2 A. So I would say between the box 430, which is the
3 set-top box, and the external storage device, which
4 is not really part of the system that's being
5 described in Foster, there's a breaking of the
6 coupling, that the CPU is not coupled to that hard
7 disk.
8 Now, if you had a system where the only
9 thing that the recipient was designed to do, or
10 let's say the primary role of the recipient was to
11 store data, so it was a data storage system, and
12 you had a hard drive, then I would say it is
13 coupled, because when the CPU executes something in
14 that system, it's storing -- it's performing the
15 function it's intended to perform, which is to
16 store.
17 Q. So in your opinion, if it goes from the computer
18 system to a device that is storing it for purposes
19 of storage, then it's coupled to it; is that what
20 your opinion is?
21 ATTORNEY LOWENSTEIN: Objection; form.
22 THE WITNESS: Well, if you think about
23 it, the -- if you have a system whose primary
24 function is storage, then when the CPU is

1 executing, it's executing for the purpose of
2 storage.
3 So if you attach a hard disk to one of
4 the components of a system whose primary function
5 is storage, then that's coupled to it, because the
6 instructions on the CPU are going to relate to that
7 storage device.
8 But in a system like Foster, you have a
9 recipient that may decide to store, may not.
10 There's nothing known in the CPU. None of the
11 instructions there are -- are going to directly say
12 store something because it's not a system that's
13 primarily designed for storage. And in that case,
14 the hard disk that's attached on the receiver by
15 the receiver's choice isn't coupled to the CPU.
16 BY ATTORNEY NIEBERG:
17 Q. So you've said if there's a storage device
18 receiving, it has to receive instruction from the
19 CPU, that's the only way it's coupled?
20 ATTORNEY LOWENSTEIN: Objection; form.
21 THE WITNESS: What I said is that if you
22 have a system whose primary purpose is storage and
23 you plug in a hard drive to one of the components
24 of those system, then when you're executing demands

1 on the CPU that relate to storing things on that
2 hard drive, you're coupled to that hard drive.
3 BY ATTORNEY NIEBERG:
4 Q. So if the processor is in one computer and the
5 storage device is in another computer with its own
6 processor, can they be coupled?
7 ATTORNEY LOWENSTEIN: Objection; form.
8 THE WITNESS: Well, that's why I said it
9 depends on the context.
10 BY ATTORNEY NIEBERG:
11 Q. Well, what do you mean by that?
12 A. If you are attaching two computers to each other
13 that are running an application that relates to
14 storage and you attach a storage unit to one of
15 them, then I would say it's coupled to the other
16 one. So whether or not something is coupled
17 depends on the context of what it is that's being
18 connected.
19 Q. And so what context does the claim require?
20 ATTORNEY LOWENSTEIN: Objection; scope.
21 THE WITNESS: I'm sorry. I don't
22 understand the question.
23 BY ATTORNEY NIEBERG:
24 Q. Well, you said the coupling -- the claim set

1 requires the memory coupled to the processor. You
2 said whether it's coupled or not depends on the
3 context, right?
4 A. Right.
5 Q. All right. What context are a -- is a memory
6 coupled to the processor?
7 A. The question is, if you look at a particular
8 system, is it coupled? And so if we look at
9 Foster, I would say that any memory attached to the
10 recipient is not coupled to the CPU in Foster in
11 the computer system. If you want to show me
12 another system, I can do analysis and tell you
13 whether it's coupled, as well.
14 Q. But I'm not understanding why you believe that
15 Foster's memory and the recipient is not coupled to
16 the processor.
17 A. I thought I explained it. I'm not sure --
18 Q. Well, let me ask it this way. Do you think there's
19 any -- the term "coupled to" is what I'm trying to
20 focus on. I want to know what you think that term
21 "coupled to" the processor requires.
22 A. I --
23 ATTORNEY LOWENSTEIN: Is that a
24 question?

1 BY ATTORNEY NIEBERG:
2 Q. Yes. What does coupled to the processor require?
3 ATTORNEY LOWENSTEIN: Objection; form,
4 scope.
5 THE WITNESS: I have not come up with
6 that. That's not an opinion that I'm offering.
7 BY ATTORNEY NIEBERG:
8 Q. Okay. So you just know Foster's recipient's memory
9 is not coupled to it, but you don't know what
10 "coupled to" means?
11 ATTORNEY LOWENSTEIN: Objection.
12 BY ATTORNEY NIEBERG:
13 Q. Is that your testimony?
14 A. No, that's not what I said.
15 Q. What does coupled to the processor require in order
16 to meet Claim 1?
17 ATTORNEY LOWENSTEIN: Objection; scope,
18 form.
19 THE WITNESS: I haven't done that
20 analysis.
21 BY ATTORNEY NIEBERG:
22 Q. Okay. You just know Foster's processor is not
23 coupled to the memory in the recipient; is that
24 right?

1 ATTORNEY LOWENSTEIN: Objection; form.
2 THE WITNESS: I don't agree with the
3 word "just," but I do know that.
4 BY ATTORNEY NIEBERG:
5 Q. But you can't tell me why it's not coupled to it?
6 ATTORNEY LOWENSTEIN: Objection; form.
7 THE WITNESS: I did tell you why.
8 BY ATTORNEY NIEBERG:
9 Q. And that's because coupled to requires sending
10 instructions from the processor to the storage
11 device?
12 ATTORNEY LOWENSTEIN: Objection; form.
13 THE WITNESS: The claim requires
14 executing code via processor. It performs storing
15 in a memory coupled to the processor, and that is
16 not happening in the Foster system.
17 BY ATTORNEY NIEBERG:
18 Q. And that's because in your opinion the recipient is
19 like someone watching a movie; is that right?
20 ATTORNEY LOWENSTEIN: Objection; form.
21 THE WITNESS: So it's described in my
22 report, one of the reasons is that the -- there
23 can't be instructions in the CPU to store something
24 in the memory of the recipient system.

1 BY ATTORNEY NIEBERG:
2 Q. But why is that?
3 A. That's how Foster described their system.
4 Q. Well, that's -- that's when the recipient is a
5 cable customer; is that your opinion?
6 ATTORNEY LOWENSTEIN: Objection; form.
7 THE WITNESS: I don't understand that
8 question.
9 BY ATTORNEY NIEBERG:
10 Q. Well, the recipient in Foster, what is your
11 understanding of what the recipient is for 430 in
12 Foster?
13 A. It's a person with a set-top box wants to watch a
14 movie.
15 Q. Is that the only thing that Foster says the
16 recipient can be?
17 ATTORNEY LOWENSTEIN: Objection; form.
18 THE WITNESS: Would you be able to
19 provide me with an electronic copy of Foster?
20 BY ATTORNEY NIEBERG:
21 Q. Yes.
22 A. Searchable one.
23 Q. Well, that might take a moment.
24 ATTORNEY LOWENSTEIN: While we're doing

1 that, can we get an estimate on time, madam court
2 reporter?
3 THE COURT REPORTER: We've been on for
4 just about two hours.
5 ATTORNEY LOWENSTEIN: Including the
6 first half.
7 THE COURT REPORTER: I don't know that.
8 ATTORNEY LOWENSTEIN: I think you're in
9 the six hours is the rough estimate.
10 ATTORNEY NIEBERG: I don't plan to have
11 much more.
12 MR. ELLIOTT: I think it's about six
13 hours and almost 15 minutes. So about 45 minutes
14 left.
15 ATTORNEY NIEBERG: Okay.
16 BY ATTORNEY NIEBERG:
17 Q. I'm going to provide you an OCR version of the
18 Foster.
19 A. Okay. Thank you.
20 Q. All right. If you turn to paragraph 41 of Foster.
21 A. Sure.
22 Q. You see a definition of recipient?
23 A. Sure.
24 Q. And it says, any entity, such as a content service

1 provider or a receiver capable of receiving
2 transmissions. Do you see that?
3 A. Yes.
4 Q. So recipient can also be a content service
5 provider?
6 A. That's what it says.
7 Q. What would that mean for the recipient to be a
8 content service provider?
9 A. Like, in the discussion we had earlier, you know,
10 AT&T receiving it from Disney.
11 Q. Okay. So the recipient could be receiving -- the
12 content service provider is recipient when it's
13 receiving content from the content owner?
14 A. That makes sense.
15 Q. And the 430 -- sorry -- in Figure -- Figure 16 in
16 Foster --
17 A. Right.
18 Q. -- recipient is 430, right?
19 A. Right.
20 Q. And so when the recipient is a content service
21 provider, it's going to receive content, right?
22 A. Yep. It will.
23 Q. So it's going to be receiving encrypted content
24 from Foster's system at recipient 430 where it's a

1 content service provider, correct?
2 A. That's right.
3 Q. And what was -- to your system 400, who would be
4 controlling computer system 400 in that embodiment?
5 ATTORNEY LOWENSTEIN: Objection; scope.
6 THE WITNESS: It could be another
7 service provider or it could be a content owner. I
8 don't believe it says.
9 ATTORNEY NIEBERG: Can you give me five
10 minutes off the record? I think I'm done.
11 - - -
12 (Whereupon, a brief recess was taken at
13 this time.)
14 - - -
15 ATTORNEY NIEBERG: I have no further
16 questions, subject to if there's any redirect, but
17 thank you very much for your time, and I pass the
18 witness.
19 ATTORNEY LOWENSTEIN: So we're going to
20 talk amongst ourselves and, obviously, I think one
21 of us -- let us talk briefly and, hopefully, we'll
22 be back on in ten minutes or so.
23 ATTORNEY NIEBERG: Okay.
24 - - -

1 (Whereupon, a brief recess was taken at
2 this time.)
3 - - -
4 ATTORNEY LOWENSTEIN: We have no further
5 questions.
6 Ms. O'Connor, do you need anything from
7 either of us?
8 THE COURT REPORTER: Can we get concrete
9 delivery dates?
10 ATTORNEY NIEBERG: I would like the
11 rough whenever that's ready and the same with the
12 final.
13 ATTORNEY LOWENSTEIN: Actually, Steve,
14 do you want it earlier for any reason?
15 ATTORNEY ELLIOTT: What date did you say
16 you get it by? When is your filing due?
17 ATTORNEY NIEBERG: The 23rd.
18 THE COURT REPORTER: Eight business
19 days.
20 ATTORNEY ELLIOTT: Whatever --
21 ATTORNEY NIEBERG: It will be ready if
22 you guys want to pay the little bit extra for it.
23 Up to you.
24 ATTORNEY ELLIOTT: Yeah, we'll pay the

1 little bit extra.

2 - - -

3 (At 5:50 P.M. the deposition proceedings

4 concluded.)

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2 CERTIFICATE

3

4 I, RENEE J. OGDEN, certify that
5 this deposition was taken before me on the
6 date hereinbefore set forth; that the
7 foregoing questions and answers were
8 recorded by me stenographically and reduced
9 to computer transcription; that this is a
10 true, full and correct transcript of my
11 stenographic notes so taken; and that I am
12 not related to, nor of counsel to, either
13 party nor interested in the event of this
14 cause.

15

16

17

18

19 Renee J Ogden

20 RENEE J. OGDEN, RPR, CSR-3455

21

22

23

24

1 CERTIFICATE

2 I, DANIELLE O'CONNOR, certify that
3 this deposition was taken before me on the
4 date hereinbefore set forth; that the
5 foregoing questions and answers were
6 recorded by me stenographically and reduced
7 to computer transcription; that this is a
8 true, full and correct transcript of my
9 stenographic notes so taken; and that I am
10 not related to, nor of counsel to, either
11 party nor interested in the event of this
12 cause.
13
14
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