

1 UNITED STATES PATENT AND TRADEMARK OFFICE  
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD  
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4

5 KEYSIGHT TECHNOLOGIES, INC.,  
6 Petitioner,

7 vs.

IPR2023-00446

8 CENTRIPETAL NETWORKS, LLC, U.S. Patent 10,567,343  
9 Patent Owner.  
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13 DEPOSITION OF MICHAEL GOODRICH, PH.D.

14 Remote Zoom Proceeding

15 Irvine, California

16 Friday, January 5, 2024  
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23 REPORTED BY:

24 LESLIE ROCKWOOD ROSAS, RPR, CSR 3462

25 Pages 1 - 97

Job No. 6393105

Page 1

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IPR2023-00446

8 CENTRIPETAL NETWORKS, LLC,

U.S. Patent 10,567,343

9 Patent Owner.  
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12 Deposition of MICHAEL GOODRICH, PH.D., taken on  
13 behalf of Petitioner, Remote Zoom Proceeding from Irvine,  
14 California, beginning at 8:00 a.m. Pacific Standard Time  
15 and ending at 10:48 a.m. Pacific Standard Time, on  
16 Friday, January 5, 2024, before Leslie Rockwood Rosas,  
17 RPR, CSR No. 3462.  
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I N D E X

FRIDAY, JANUARY 5, 2024

WITNESS

EXAMINATION

MICHAEL GOODRICH, PH.D.

BY MR. DONOVAN

6

QUESTIONS WITNESS INSTRUCTED NOT TO ANSWER:

(NONE)

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DEPOSITION EXHIBITS

MICHAEL GOODRICH, PH.D.

| NUMBER | DESCRIPTION | IDENTIFIED |
|--------|-------------|------------|
|--------|-------------|------------|

(None marked.)

PREVIOUSLY MARKED EXHIBITS REFERENCED:

| EXHIBIT      | DESCRIPTION                                                                  | IDENTIFIED |
|--------------|------------------------------------------------------------------------------|------------|
| Exhibit 1001 | Patent No.: US 10,567,343 B2                                                 | 8          |
| Exhibit 2010 | Declaration of Dr. Michael T. Goodrich in Support of Patent Owner's Response | 10         |
| Exhibit 1020 | Wayback Machine, Emerging Threats                                            | 18         |
| Exhibit 2018 | Message from Matt Jonkman to bleeding-sigs, 7.5.2006                         | 32         |
| Exhibit 1030 | Affidavit of Nathaniel E. Frank-White                                        | 63         |
| Exhibit 1054 | Proofpoint Emerging Threat Rules                                             | 63         |
| Exhibit 2016 | Wayback Machine, Ruleset Downloads                                           | 64         |
| Exhibit 2029 | Web address list                                                             | 69         |

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Irvine, California; Friday, January 5, 2024

8:00 A.M.

PROCEEDINGS

MICHAEL GOODRICH, PH.D.,

called as a witness, having been duly sworn,  
was examined and testified as follows:

THE REPORTER: And, Counsel, would you please  
introduce yourselves.

08:01:31

MR. DONOVAN: This is Gerard Donovan with Reed  
Smith for Petitioner Keysight, and with me today is  
Jonathan Matthews to assist with presenting exhibits.

MR. PRICE: This is Jeffrey Price from Kramer  
Levin Naftalis & Frankel, and joining me today is  
Jeffrey Eng, also from Kramer Levin.

08:01:43

THE REPORTER: Thank you.

You may proceed, Counsel.

MR. DONOVAN: Thank you.

08:01:54

EXAMINATION

BY MR. DONOVAN:

Q. Dr. Goodrich, I represent Keysight in  
IP2023-00446, which challenges the claims of US Patent  
Number 10,567,343, which I'll refer to today as the '343

08:02:04

1 patent.

2 About how many times before have you been  
3 deposed?

4 A. I've lost track of the number, but I'm confident  
5 it is more than 40. 08:02:18

6 Q. And since you're experienced with depositions,  
7 I'm not going to go through a complete explanation of how  
8 depositions work, but can you confirm, since we're remote  
9 today, that you can hear me all right?

10 A. Yes, I can hear you fine. 08:02:33

11 Q. If you run into any technical issues today, will  
12 you let me know so we can correct them?

13 A. I will.

14 Q. And since we're doing this remotely, can you  
15 confirm that you'll only use your computer or any other 08:02:43  
16 devices while we're on the record to participate in this  
17 deposition and not to communicate with others?

18 A. I agree.

19 Q. And if you refer to any document to answer a  
20 question, can you indicate to me what that document is so 08:02:57  
21 we have a complete record?

22 A. I'll do my best to do that.

23 Q. Thank you.

24 Do you have any documents with you today?

25 A. No. 08:03:05

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1 Q. And you should have access to the exhibit portal  
2 where we'll post exhibits so you can access them and see  
3 them during the deposition. As we've done before, we'll  
4 also put the exhibits up on screen to hopefully make  
5 things easier. If you want us to navigate to any portion 08:03:20  
6 of a document that's up on screen, just let us know and  
7 we'll do that for you. Okay?

8 A. Okay. I think I have the Exhibit Share window  
9 open.

10 Q. Okay. Well, first let's bring up Exhibit 1001, 08:03:32  
11 which is the '343 patent.

12 Dr. Goodrich, do you recognize this as a page  
13 from the '343 patent?

14 A. Sorry, there's so many folders with Exhibit  
15 Share. I might be at the wrong -- 08:03:58

16 Q. You might -- within the folder tree, is there a  
17 folder for Keysight Technologies versus Centripetal  
18 Networks?

19 A. Yes.

20 Q. Within that is there a deposition for you marked 08:04:15  
21 with today's date?

22 A. Oh, there's today's date. Got it. Okay. Very  
23 good. Thank you.

24 Q. There should be one exhibit in the exhibit  
25 folder, I believe. 08:04:41

Page 8

1           A. There it is. I see it now. And it is, indeed,  
2 the '343 patent.

3           Q. Okay. And let's go down to PDF page 14. It's  
4 column 8 of the patent.

5                   And, Dr. Goodrich, you've reviewed this patent           08:04:53  
6 before; right?

7           A. That is correct.

8           Q. Let's go to line -- about line 14 in column 8.

9                   Do you see where it says, "For an HTTPS session  
10 composed of IP packets, the application packets contained           08:05:12  
11 in the IP packets may be TLS record protocol packets"?

12                   Do you see that?

13           A. I do.

14           Q. What do you understand "the application packets  
15 contained in the IP packets" to mean?           08:05:25

16           A. Just what it says, that the way that packets are  
17 formed, that there's a nesting structure for how they are  
18 logically organized and that higher-level packets in the  
19 network hierarchy will be inside of the packets that have  
20 the lower layers in that hierarchy.           08:05:51

21           Q. And are HTTP packets -- or HTTPS packets higher  
22 in that hierarchy?

23           A. They would be higher than IP packets in the  
24 hierarchy. So they would be inside of an IP packet -- of  
25 different IP packets, potentially.           08:06:15

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1 Q. And are TLS record protocol packets application  
2 packets?

3 A. That's what the specification says, yes.

4 Q. Do those application packets include header  
5 fields that contain values indicating the TLS version? 08:06:38

6 A. I agree with that, yes.

7 Q. Do you know how the TLS version is indicated in  
8 the application packet header field for a TLS packet?

9 A. It's -- my understanding is that it's a binary  
10 value that then tells you, like, a version number and a 08:06:55  
11 protocol number. This type of thing.

12 Q. Is that the same for SSL packets as well?

13 A. That's my recollection, yes.

14 MR. DONOVAN: Jon, could you bring up  
15 Exhibit 2010 next, Dr. Goodrich's declaration? 08:07:15

16 Q. Dr. Goodrich, your declaration's up on the  
17 screen. I now see it in the exhibit portal as well.

18 Once you have it up, can you let me know if you  
19 recognize this as the declaration you submitted in this  
20 IPR? 08:08:12

21 A. Yes, it appears to be that declaration.

22 Q. And could we go to page 16 of the PDF?

23 A. I'm there.

24 Q. And paragraph 33, it starts out saying that,  
25 "The '343 patent discloses techniques for preventing a 08:08:43

Page 10

1 category of cyber attacks known as exfiltrations  
2 (e.g., stealing sensitive data or credentials via the  
3 internet.)"

4 A. That's from the patent, yes.

5 Q. And you're quoting the patent there; right? 08:08:59

6 A. That is correct.

7 Q. In forming your opinions, did you consider  
8 stealing sensitive data or credentials via the internet  
9 to be an example of infiltration?

10 A. That was an example that I took from the patent 08:09:12  
11 specification which then informed my discussion of  
12 exfiltration that I talk about in the section on claim  
13 construction in my declaration.

14 Q. And can you provide any other examples of  
15 exfiltration? 08:09:30

16 A. Well, I give in the very next sentence another  
17 example from another exhibit.

18 Q. What example is that?

19 A. So, "Data exfiltrations occur when malware  
20 and/or malicious actors carry out an unauthorized data 08:09:58  
21 transfer from a computer. For example, a cyber-criminal  
22 might steal data such as usernames/passwords, personal  
23 information, financial data, or corporate trade secrets,  
24 and exfiltrate that data out from a computer or network  
25 and into their possession." 08:10:16

1 Q. And then after that, you say, "Exfiltrations may  
2 occur through a user's inadvertent or accidental action";  
3 is that right?

4 A. That's correct.

5 Q. What would cause exfiltrations by a user's 08:10:31  
6 inadvertent or accidental action?

7 A. I was including here examples where somebody  
8 would click on an attachment that was, like, a phish --  
9 what we commonly refer to as a phishing attack, that then  
10 would, you know, bring in some malware inadvertently that 08:10:50  
11 the user wasn't deliberately trying to themselves be  
12 malicious, and then that malware could then perform an  
13 exfiltration after that.

14 Q. And what type of information is exfiltrated in  
15 these exfiltration attacks? 08:11:14

16 A. This was just some examples. But it could  
17 include usernames and passwords, personal information,  
18 financial data or corporate trade secrets.

19 Q. And that's a non-exhaustive list; right?

20 A. That is correct. 08:11:37

21 Q. And the examples of exfiltration we just  
22 discussed, that would be a non-exhaustive list of  
23 examples of exfiltration; is that correct?

24 A. I agree.

25 Q. Let's go to page 23 of your declaration. 08:11:49

Page 12

1           And I'm using the page numbers in the bottom  
2       right, the PDF pages, just to make the record clear.

3           A. I am also using that understanding.

4           Q. Perfect.

5           Do you see paragraph 46 there? 08:12:10

6           A. I do.

7           Q. You say that the emerging threats file contains  
8       over 11,000 Snort rules.

9           Do you see that?

10          A. Yes. 08:12:23

11          Q. What's a Snort rule?

12          A. So Snort is a language for defining rules that  
13       have certain syntax for defining rules for analyzing and  
14       doing operations on network packets. And so that's what  
15       I'm referring to here, the Snort language syntax for 08:12:43  
16       defining rules. And this file has over 11,000 such  
17       rules.

18          Q. What experience do you have using Snort rules?

19          A. I'm familiar with them generally. And then as a  
20       part of this matter as well as other matters I've worked 08:13:02  
21       on as an expert, I have studied Snort in more detail.

22          Q. Did you have experience with Snort rules prior  
23       to the effective filing date of the '343 patent?

24          A. Not specifically, no. I was generally aware of  
25       Snort rules, but I don't recall the year that that 08:13:22

Page 13

1 awareness began. And then in more detail, as I mentioned  
2 with -- more recently.

3 Q. When is the first specific experience you've had  
4 analyzing Snort rules?

5 A. I don't recall the exact date, but I recall that 08:13:40  
6 it's in reference to engagements I've had on behalf of  
7 Centripetal Networks.

8 Q. Do you recall roughly what year that would have  
9 been?

10 A. No, I don't recall the year. It would be, of 08:13:58  
11 course, after 2016.

12 Q. Okay. And prior to 2016, did you ever analyze a  
13 specific Snort rule?

14 A. I don't recall having analyzed specific Snort  
15 rules before that. 08:14:18

16 Q. Have you ever written Snort rules prior to 2016?

17 A. I don't recall doing that.

18 Q. Have you used any systems that use Snort rules  
19 prior to 2016?

20 A. I may have, but I don't recall any specific 08:14:29  
21 details, as I sit here today.

22 Q. Can you name some security systems that use  
23 Snort rules? Let me refine that question.

24 Can you name security systems that used Snort  
25 rules prior to 2013? 08:14:45

Page 14

1           A. Just sitting here today, I'm not recalling  
2 something specific.

3           Q. Are you aware of Sourcefire?

4           A. I am aware of Sourcefire. I'm just not  
5 recalling the year that that was -- yes, now that you           08:14:57  
6 mentioned it, I do recall Sourcefire having used Snort  
7 rules prior to 2013.

8           Q. But sitting here today, you can't recall any  
9 other systems that used Snort rules prior to 2013?

10          A. I recall that there was a general open source           08:15:15  
11 Snort release that occurred before 2013. I don't know  
12 if that -- you would consider that as a separate system  
13 per se or not. But that's also something, of course,  
14 that would use Snort itself.

15          Q. What do you mean by "a general open source Snort           08:15:31  
16 release"?

17          A. My understanding is that Snort was originally  
18 released as an open source project that was not a part of  
19 Sourcefire. And then Sourcefire developed software that  
20 then would build -- sort of build from that open source           08:15:50  
21 release to then add on more functionality and interfaces  
22 and things like that.

23          Q. So this other open source Snort system predated  
24 Sourcefire?

25          A. That's my recollection, yes, as I sit here           08:16:11

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1 today.

2 Q. Are you familiar with the Emerging Threats  
3 ruleset?

4 A. I am, yes.

5 Q. When did you first become aware of the Emerging 08:16:25  
6 Threats ruleset?

7 A. As a part of this action.

8 Q. You mean as a part of this IPR?

9 A. As a part of the -- the general -- there's a  
10 number of different cases that involve Centripetal 08:16:38  
11 Networks and other parties, including Keysight. So it's  
12 a part of that work that I became aware of Emerging  
13 Threats.

14 Q. And that would have been after 2016, when you  
15 started doing work for Centripetal; is that right? 08:16:53

16 A. That is correct.

17 Q. Do you recall when in the course of your work  
18 for Centripetal you first became aware of Emerging  
19 Threats?

20 A. It would be much more recently. So it's 08:17:06  
21 certainly after 2020.

22 Q. Do you recall how you first became aware of  
23 Emerging Threats?

24 A. My recollection is it was part of this action.

25 So either this -- IPR-related matters where Emerging 08:17:18

Page 16

1 Threats was being put forth as alleged prior art.

2 Q. Do you have an understanding of who contributes  
3 rules to the Emerging Threats ruleset?

4 A. Yes.

5 Q. Who does that?

08:17:36

6 A. I have a paragraph in my declaration about that,  
7 as I recall. Let me try to find it.

8 Yeah, so this is in paragraph 53 of my report,  
9 which begins on PDF page 27, where I talk about how the  
10 SID, the Snort ID, that are assigned to Snort rules is an 08:18:24  
11 indication of where the rule originated.

12 So, for example, I talk about how -- that SIDs  
13 that are greater than or equal to 1 million are local  
14 rules, that those numbers are generated by a system when  
15 they create the rule and that then SIDs between 2,000,000 08:18:54  
16 and 2,999,999 are allocated to general rulesets while  
17 other ranges of SIDs are allocated to other projects. I  
18 give some examples.

19 So this is -- various parties can contribute  
20 Snort rules that then go into this Emerging Threats list. 08:19:20

21 Q. When you say "various parties," do you know what  
22 parties or what communities submitted Snort rules to the  
23 Emerging Threats list?

24 A. There was many, as I recall. I'm not recalling  
25 the full set of them, as I sit here today. 08:19:41

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1 Q. And do you know when the many parties were  
2 contributing rules to the emerging set -- sorry, Emerging  
3 Threats ruleset?

4 MR. PRICE: Objection. Calls for speculation.

5 THE WITNESS: My understanding is that they 08:19:59  
6 occurred prior to the date that -- that an exhibit was  
7 used and created for this matter.

8 Q. BY MR. DONOVAN: When you say an exhibit was  
9 created for this matter, you're referring to the Emerging  
10 Threats Exhibit 1020? 08:20:17

11 A. Yes, which has multiple parts.

12 Q. And so prior to the creation of that exhibit,  
13 there were many parties that were contributing rules to  
14 the Emerging Threats ruleset; is that correct?

15 A. Yes, I agree with that. 08:20:31

16 Q. And to clarify my question, I referred to the  
17 creation of the exhibit. But prior to the creation of  
18 the ruleset that existed in 2010, there were many parties  
19 that were contributing rules to the Emerging Threat  
20 ruleset; right? 08:20:53

21 A. I agree. We see from the Exhibit 1020,  
22 oftentimes the rules have the name or user ID of the  
23 person who contributed that rule. And we see from that  
24 long list of over 11,000 rules many different names.

25 Q. Did you try to compute how many different 08:21:14

1 contributors there were to the Emerging Threats ruleset  
2 prior to 2010?

3 A. No, I didn't count that per se, other than that  
4 there was, like I said, over 11,000 rules.

5 MR. DONOVAN: Jon, could you go to PDF page 37 08:21:36  
6 of Dr. Goodrich's report?

7 Q. And, Dr. Goodrich, before we go to this, do you  
8 know how members of the security community knew to submit  
9 rules to the Emerging Threat ruleset prior to 2010?

10 A. I'm not recalling that, as I sit here today. 08:22:05

11 Q. Did you investigate how many people in the  
12 security community knew about the Emerging Threats  
13 ruleset prior to 2010?

14 A. I -- I did investigate to the degree of  
15 determining whether or not I agreed that the Emerging 08:22:20  
16 Threats list was printed publication. And based on that  
17 analysis, I came to the conclusion that it is not a  
18 printed publication and would not qualify as prior art to  
19 the '343 patent.

20 Q. What did you do to investigate how many people 08:22:37  
21 in the security community knew about the Emerging Threats  
22 ruleset prior to 2010?

23 MR. PRICE: Objection. Misstates testimony.

24 THE WITNESS: That's not what I'm saying.

25 Instead, I'm saying that I did analysis to determine 08:22:49

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1 whether or not it would be possible for a person of  
2 ordinary skill in the art to locate and find relevant  
3 Snort rules in the Emerging Threats list as of the prior  
4 art date for the '343 patent.

5 And based on my analysis, that would not be 08:23:10  
6 something that would be effectively feasible for a person  
7 of ordinary skill in the art.

8 Q. BY MR. DONOVAN: Did you analyze whether a  
9 person of ordinary skill in the art would have been able  
10 to locate the Emerging Threats ruleset prior to the 08:23:21  
11 priority date of the patent?

12 A. Yes. As I said, I believe, based on my  
13 analysis, that it would not be effectively possible for a  
14 person of ordinary skill in the art to locate the  
15 Emerging Threats list, as well as find specific Snort 08:23:44  
16 rules in that list, based on any kind of a querying or  
17 interest that the person of ordinary skill in the art  
18 would have.

19 Q. And what is the basis for your conclusion that  
20 one of skill in the art wouldn't have known to look for 08:23:59  
21 the Emerging Threats rule list if they were looking for  
22 Snort rules?

23 A. Because -- simply for the reason that -- simply,  
24 the existence of content on the internet as of, let's  
25 say, 2010 or 2013 is not sufficient, in my view, for 08:24:20

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1 something to be considered as printed publication.

2 Because the internet is vast and searching for content on  
3 the internet without having indexing information  
4 available is not feasible.

5 Q. Does Exhibit 1020, the Emerging Threats ruleset, 08:24:44  
6 indicate that numerous contributors were able to locate  
7 that ruleset prior to 2010?

8 A. It -- it does indicate that -- sorry.

9 THE WITNESS: Was there a --

10 Yeah, so it does indicate that there was 08:25:00  
11 multiple contributors, as we talked about earlier today.

12 But in my opinion, that does not imply that a person of  
13 ordinary skill in the art would be able to locate the  
14 Emerging Threats website or to locate any specific rules  
15 using any kind of search or query that they would be 08:25:21  
16 interested in, to then find Snort rules among those  
17 11,000, which itself is also a vast number, of course.

18 Q. BY MR. DONOVAN: Dr. Goodrich, on paragraph 74  
19 of your declaration, you copy the rule with SID 2003021  
20 from Emerging Threats. 08:25:56

21 Do you see that?

22 A. Yes.

23 Q. What is the message field in this rule?

24 A. The message field is this msg field, which is a  
25 type of a comment, if you will, that the author of this 08:26:10

Page 21

1 rule put in to try to explain their -- either their  
2 intent or what they feel is going on with this rule.

3 Q. And the message rule for this specific rule is,  
4 "ET POLICY TLS/SSL Encrypted Application Data on Unusual  
5 Port SSLv3"; is that right? 08:26:36

6 A. That's right.

7 Q. What is SSLv3?

8 A. So SSL is a protocol for encrypting packets on  
9 the internet. Refers to secure socket layer. It's also  
10 related to another protocol called TLS, which subsumed 08:26:56  
11 the SSL protocol. And so that's what this is referring  
12 to.

13 There's also, later on in this same rule, that's  
14 referring to SSL\_TLS\_on\_High\_Port that is also related to  
15 what's going on in this rule. 08:27:21

16 Q. Were you familiar with SSLv3 before your work in  
17 this IPR?

18 A. Yes.

19 Q. When did you first become aware of SSLv3, to the  
20 best of your recollection? 08:27:35

21 A. I don't recall the date. It was -- yeah, I  
22 don't recall the date, just sitting here today.

23 Q. Would that have been early 2000s?

24 A. That's my general recollection, but I -- I don't  
25 feel comfortable specifically speculating on that. 08:27:51

Page 22

1 Q. Did you become aware at some point that SSLv3  
2 was out of date and no longer secure?

3 A. Yes.

4 Q. Do you recall when you learned that SSLv3 was  
5 out of date and no longer secure?

08:28:06

6 A. I -- I don't recall the exact date, but my  
7 general recollection is that that occurred in the time  
8 frame of, like, 2014, 2015, 2016, that range, after what  
9 I considered to be the priority date for the '343 patent.

10 Q. Is it -- your general recollection is that the  
11 SSLv3 was secure until after the priority date of the  
12 patent?

08:28:25

13 MR. PRICE: Objection. Misstates testimony.

14 THE WITNESS: It was -- I think the way to say  
15 that instead is that it was generally still considered to  
16 be secure but there may have been some risks that people  
17 were getting concerned about, so that by that date when  
18 it was deprecated and then replaced with the TLS  
19 protocol, that then it was considered to be something of  
20 a calculated risk.

08:28:39

08:29:06

21 But it was still being used, it's just that now  
22 people should know that there's -- there's some potential  
23 risks involved with that. And some people are still  
24 using it for secure communications, and it was still  
25 protecting those communications. Certainly more than

08:29:23

Page 23

1 would be if they were not using encryption.

2 But then this TLS came along and was even  
3 better, and so the community communicated to the wider  
4 internet world that they should be switching over to TLS.

5 Q. BY MR. DONOVAN: Do you recall what version of 08:29:48  
6 TLS replaced SSLv3?

7 A. I thought it was the earlier version of TLS, so  
8 1.0, 1.1. Those kind of ranges. I'm not recalling, as I  
9 sit here today, the exact numbers.

10 Q. Was there a time period between when it was 08:30:06  
11 discovered that there were security vulnerabilities for  
12 SSLv3 and when it was ultimately replaced?

13 A. I'm not recalling that, as I sit here today.

14 Q. Do you have any recollection of when security  
15 vulnerabilities were discovered for SSLv3? 08:30:25

16 A. I'm not recalling the exact dates, as I'm  
17 sitting here today.

18 Q. At some point, were attackers able to decrypt  
19 HTTPS sessions that used SSLv3?

20 A. I don't recall that, as I sit here today. 08:30:47

21 Q. If an attacker could decrypt an HTTPS session  
22 using SSLv3, what would they have to gain?

23 A. I'm not understanding your question.

24 Q. Why would an attacker want to decrypt an  
25 encrypted SSL session? 08:31:09

1 A. There could be multiple reasons.

2 Q. What are some of them?

3 A. To learn the contents of an encrypted packet,  
4 generally.

5 Q. Could attackers want to decrypt HTTPS sessions 08:31:25  
6 to steal passwords?

7 A. I would need more time to answer that question  
8 and do that analysis.

9 Q. Is it your understanding that attackers would  
10 want to decrypt encrypted SSL packets to steal sensitive 08:31:43  
11 information?

12 A. That depends on the context. That -- again, I  
13 would want more time to try to look at what you mean by  
14 that. That's just -- yeah.

15 Q. Is it fair to say that one of the reasons an 08:32:02  
16 attacker would want to decrypt encrypted HTTPS sessions  
17 using SSLv3 would be to intercept personal information?

18 MR. PRICE: Objection. Calls for speculation.

19 THE WITNESS: Yeah, I would say the same way I  
20 did before, I'd want more time to analyze that question. 08:32:21  
21 That's not something that I was asked to address in my  
22 declaration.

23 Q. BY MR. DONOVAN: Do you consider yourself to be  
24 an expert on computer security?

25 A. Yes, I do. 08:32:31

1 Q. And do you have any opinion of whether or not  
2 someone encrypting an -- sorry, decrypting an encrypted  
3 HTTPS session would be to seal sensitive information?

4 A. That's a very broad question. And now almost  
5 all internet communications, even benign, are encrypted 08:32:49  
6 using TLS. So to answer your question would require more  
7 time and analysis in -- to understand the context.

8 Q. Dr. Goodrich, what is a 5-tuple?

9 MR. DONOVAN: And for the reporter, that's 5,  
10 and then T-U-P-L-E. 08:33:13

11 THE WITNESS: Generally, in the context of  
12 networking, we refer to the 5-tuple or packets to be a --  
13 a record that includes five values that then would be  
14 giving information about that packet.

15 Q. BY MR. DONOVAN: What are those five values? 08:33:38

16 A. Typically, when people refer to the 5-tuple,  
17 they're referring to five values that are the source IP  
18 addresses, the source port number, the protocol being  
19 used, the destination IP address and the destination port  
20 number. 08:34:06

21 Q. We still have up on the screen the Rule 2003021.  
22 Is there a 5-tuple requirement for that rule?

23 A. There is.

24 Q. What is the 5-tuple requirement for this rule?

25 A. So, again, this rule is commented out so it's 08:34:21

1 not actually functional. But the rule -- the  
2 specification at the beginning talks about how it has,  
3 "tcp \$HOME\_NET any," then arrow, "\$EXTERNAL\_NET," and  
4 then a range of port numbers, "1024:65535."

5 Q. And what is the meaning of that 5-tuple in this 08:34:57  
6 rule?

7 A. Technically, this is not a 5-tuple itself. It's  
8 a rule for matching packets based on whether or not they  
9 satisfy this formula.

10 Q. Is this a rule that could be loaded into a 08:35:20  
11 Snort-based system?

12 A. Technically, no, because it's commented out. It  
13 would not have any functionality.

14 So the answer is no, this rule would not do  
15 that. 08:35:36

16 Q. But would a person of skill in the art have  
17 understood that a commented-out rule could be uncommented  
18 out to be loaded into a Snort system?

19 A. They would understand that that could be done.  
20 But in my opinion, in this case they would have no 08:35:50  
21 motivation to do that.

22 Q. Do you have any opinion as to why this rule is  
23 included in the ruleset, if it's commented out?

24 A. My understanding is that Emerging Threats  
25 included a lot of commented-out rules. I would be 08:36:08

1 uncomfortable speculating why they did that. That seems  
2 like a waste of time.

3 Q. And if this rule was not commented out, what  
4 5-tuple would trigger this rule?

5 A. So that depends on context. But generally 08:36:27  
6 speaking, if you commented -- if you uncommented out, so  
7 now that pound sign at the beginning was deleted, then  
8 this would -- depending on the settings for what is  
9 determined to be home net and external net, this would  
10 match a packet that's using the TCP protocol and is 08:36:46  
11 coming -- and is -- has a source address that matches the  
12 home net and has a destination address that is included  
13 in the external net and has a port number between 1024  
14 and 65535.

15 Q. When you said "has a port number," are you 08:37:13  
16 referring to the destination port?

17 A. Correct.

18 Q. And this 5-tuple does not have a port  
19 requirement for the source port; correct?

20 A. Again, this is not a 5-tuple itself. It is 08:37:26  
21 syntax for attaching packets based on this formula.

22 Q. All right. With that clarification, the syntax  
23 for matching packets does not have a restriction on the  
24 source port for a 5-tuple to match this rule; is that  
25 right? 08:37:50

1           A. I agree. It says that it can match any port  
2   number so long as the source address would be included in  
3   the collection that would be called home net.

|   |                                                          |          |
|---|----------------------------------------------------------|----------|
| 4 | Q. And so if a packet satisfied the matching of the      |          |
| 5 | 5-tuple so it had -- the TCP was from home net on a port | 08:38:09 |
| 6 | to external net within the port range 1025, 65535, what  |          |
| 7 | would happen next in this rule?                          |          |

8           A. Then based on that syntax, it then would be  
9 analyzed based on the rest of the specification inside  
10 that rule. 08:38:37

11 Q. And what does the rest of the specification in  
12 this rule indicate how the packet would be analyzed?

13           A. There's a lot of detail here. Is there anything  
14       specific you want me to do, or do you want me to do the  
15       entire rule? 08:38:52

16 Q. If you can do the entire rule, that's what I'd  
17 like.

```
18         A. Yeah, so the next keyword is that it's:
19         "Flowbits:isset."
```

```
20         And then it has, "BS.SSL.Established." So this      08:39:06
21         is for an established SSL session. And that it's -- a
22         flow is established and, "to_server," is satisfied.
```

23 And then there's a content requirement.

|    |                                                |          |
|----|------------------------------------------------|----------|
| 24 | Then beginning at depth 4, so at position 4 in |          |
| 25 | the packet, it has, in binary, "17 03 00."     | 08:39:28 |

1           And then there's a "threshold:typelimit" of --  
2       and a count of 1. It gives a seconds, 120, for how long  
3       to process.

4           There's a tracking by source. It has a class  
5       type that -- then it's just specifying things that it       08:39:53  
6       would want to -- to save with respect to this packet that  
7       has been matched here, that it has an,  
8       "unusual-client-port-connection."

9           And then it has references to the various URLs  
10      for identifying these kinds of things that would match       08:40:19  
11      here.

12          And then it has its SID, which we talked about,  
13      2003021.

14          And then, finally, revision number for this  
15      rule.                                                               08:40:34

16          Q. For the portion where it has "content:" and then  
17      "170300," what is that checking in the packet?

18          A. In this case, it's checking specific content in  
19      the packet that has to match this binary pattern at that  
20      specified depth of 4.                                               08:40:56

21          Q. Is that checking an application packet header  
22      value?

23          A. This is checking that -- simply, that this  
24      content is -- is satisfied, that you have those --  
25      those -- those bits matched.                                       08:41:12

1 Q. And is it checking that in the application  
2 packet header?

3 A. It doesn't have any identification here of what  
4 is an application header. It's just saying, in the  
5 packet, go to position 4 and see if it matches those 08:41:26  
6 bits. That's it.

7 Q. Do you have an understanding of whether  
8 position 4 in the packet is part of the packet  
9 application header?

10 A. That depends on context. 08:41:38

11 Q. You can't tell from looking at this rule whether  
12 it's checking the packet application header value?

13 A. That depends on context of what this packet has  
14 in it.

15 Q. And I think I transposed words. 08:41:57  
16 But you can't tell whether this is checking the  
17 application packet header value?

18 A. Again, that depends on the context of: What is  
19 that packet?

20 Q. And here, it says, 08:42:11  
21 "classtype:unusual-client-port-connection."

22 Do you have an understanding of what that does?

23 A. My understanding is that that's just an  
24 indicator that the author of this rule wanted to flag  
25 this as "unusual client port connection" as -- as a flag, 08:42:29

1 if you will, and then identifying that -- that name.

2 Q. Okay. Let's go down to paragraph 78 of your  
3 report.

4 And here, about eight lines down, you say,  
5 "Also, a person of ordinary skill in the art would have 08:42:55  
6 understood that Rule SID 2003021 is one of a string of  
7 signatures designed to identify a good SSL or TLS session  
8 at high ports (example, greater than 1023)."

9 A. Yes, I see that.

10 Q. Is your opinion based on Exhibit 2018, which is 08:43:16  
11 an archived mail list from Matt Johnson of Emerging  
12 Threats?

13 A. That's -- that's one source of support for that  
14 conclusion, as well as my own experience.

15 Q. Other than your own experience in that, are 08:43:35  
16 there -- is there other support for this conclusion?

17 A. Yes. I cite also to Exhibit 2020 itself and  
18 1020, at pages 107 to 109.

19 MR. DONOVAN: All right. Let's bring up  
20 Exhibit 2018. 08:43:57

21 Q. Dr. Goodrich, this is up on your screen. It's a  
22 one-pager. It should be in your portal as well.

23 A. Oh, it is, but I can just read it off the screen  
24 because it's just one page.

25 Q. Okay. And this is the Exhibit 2018 that you 08:44:22

1 reference in your declaration; right?

2 A. I agree.

3 Q. This is a message from Mr. Jonkman to the  
4 bleedings-sigs mailing list; is that right?

5 A. That's how I interpreted this document. 08:44:32

6 Q. And this would have gone out to everyone who'd  
7 signed up for the bleeding Snort mailing list; is that  
8 your understanding?

9 A. I'm not sure that this would necessarily go out,  
10 but it is a -- it appears to be a part of an email 08:44:49  
11 archive that then would be a part of something we call a  
12 Listserv that people could then search or come back and  
13 look at, at least.

14 Q. So would it be your understanding that members  
15 of the community would be able to search and look for 08:45:09  
16 this email -- sorry, this Listserv posting?

17 A. I think it's accurate to say what you said  
18 earlier, that this would go out to people who had  
19 subscribed to this list to then get this email as a part  
20 of a package of emails. 08:45:27

21 This appears to be one such email that then is  
22 indexed in a list. And that's what we see at the top  
23 here. That then you can -- I'm not sure you can search  
24 per se the list, but you can incrementally go through the  
25 emails in this list. 08:45:51

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1 Q. How did you come to have this document?

2 A. It was provided to me.

3 Q. You didn't locate this document?

4 A. Not -- to my recollection, I did not locate this  
5 document.

08:46:05

6 Q. Did you investigate the documents that you could  
7 access from this document?

8 A. I do not understand your question.

9 Q. You can click "previous in list," "next in  
10 list," and there's a link here to see the sigs. Did you  
11 click on any of those?

08:46:18

12 A. I -- I did not interpreter those as clickable,  
13 even.

14 Q. Did you try bringing up this in a web interface?

15 A. No. I -- I viewed it in Adobe Acrobat.

08:46:33

16 Q. Do those appear to be links, to you, in the  
17 image?

18 A. They're underlined and in a different color. I  
19 didn't attempt to click on them. I mean, there's clearly  
20 things here that are underlined and in color that don't  
21 appear to be, you know, links that you could go to. One  
22 is a date, another is just the word, and another is a  
23 message ID.

08:46:52

24 So I interpreted these to just be underlined  
25 colored words.

08:47:10

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1 Q. Do you interpret "previous in list" and "next in  
2 list," where it's an underlined colored blue word, to be  
3 not links to navigate to other messages in the list?

4 A. To answer that question would require more  
5 analysis. I didn't try to click on them because, like I 08:47:26  
6 said, there's a lot of words that are underlined here  
7 that based on just the content that is being colored and  
8 underlined, did not appear to be something that could  
9 have a meaningful click, that you would go to something  
10 meaningful in. 08:47:47

11 Q. Mr. Jonkman's message here indicates that he's  
12 working on a string of signatures to identify a good SSL  
13 or TLS session; right?

14 A. Correct.

15 Q. And the signatures are targeting high ports, 08:47:57  
16 ports over 8081; is that right?

17 A. That's what he says, yes.

18 Q. Do you have an understanding of what it means to  
19 identify a good SSL or TLS session in this context?

20 A. Yes. 08:48:12

21 Q. What does it mean?

22 A. I interpreted what he means here to be that he  
23 is interested in -- in identifying SSL and TLS sessions  
24 that go to high ports, what he says is a port number over  
25 8081, that then would be legitimate. 08:48:32

1 I think that's what he means by "good SSL or TLS  
2 session," that there was a legitimate reason why somebody  
3 would want to use a high port number and encrypt the  
4 session for their communications.

5 Q. And do you have an understanding of what any of 08:48:54  
6 these signatures to identify a good SSL or TLS session  
7 were?

8 A. Yes. I cite to them in my declaration, that are  
9 exemplary happening in that exhibit. I think I said from  
10 page 107 to 109. 08:49:10

11 Q. And where is that in your declaration?

12 A. We literally just had it on the screen. It's in  
13 paragraph 78.

14 Q. We'll probably come back to that.

15 He also says, "The impetus to create this was a 08:49:39  
16 new bot that's using a standard SSL for a command and  
17 control session on a high port"; right?

18 A. Correct.

19 Q. And what does that mean?

20 A. So what that's referring to is that -- he's 08:49:53  
21 concerned about a new attack, a malicious bot, if you  
22 will, that is using standard SSL. So it's using the SSL  
23 appraisal, but it's a command and control bot that then  
24 is a risk to any computer that has that bot infecting it.

25 And then one of the characteristics of this bot 08:50:23

1 is that it initiates a standard SSL connection but uses a  
2 high port number. That is, a port number that he was  
3 saying here in the email is over 8081. But if -- now  
4 we're looking at the rules that he contributed. It was  
5 having a much bigger range than that. 08:50:47

6 Q. What do you mean when you say it initiates an  
7 SSL session?

8 A. Just that. That the bot is running as a program  
9 on the infected computer, and then it performs the steps  
10 necessary to establish an SSL connection to an external 08:51:14  
11 server. That is, a server that is not the same as that  
12 computer that it's running. Not necessarily a server  
13 outside of some local network. And then it's using a  
14 high port number. High relative to the typical standard  
15 SSL port number. 08:51:40

16 Q. What is -- well, what's the standard typical SSL  
17 port number?

18 A. 443.

19 Q. And what's a command and control session?

20 A. Command and control session is referring to a 08:51:53  
21 type of attack where malware gets into a computer, is  
22 executing on that computer in a way that then lets an  
23 external party who is not on the computer itself to then  
24 perform what we refer to as command and control  
25 operations. Have a session, if you will, to that 08:52:16

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1 computer, to be able to have it then perform actions on  
2 behalf of that external party.

3 Q. Is one of the uses for a command and control  
4 session to exfiltrate information from the computer?

5 A. Not necessarily, no. 08:52:37

6 Q. You said, "Not necessarily." Is it true that  
7 one of the uses of a command and control session is to  
8 exfiltrate data from a computer?

9 A. That depends on context. There's lots of  
10 different kinds of command and control sessions. I'd 08:52:52  
11 want more time to analyze that question.

12 Q. Is one of the types of command and control  
13 sessions to exfiltrate data?

14 A. Again, that depends on context. I'd want more  
15 time to analyze that question. 08:53:06

16 Q. Would a person of ordinary skill in the art  
17 be -- understand that a purpose of a command and control  
18 sessions is to exfiltrate data from a system?

19 MR. PRICE: Objection. Calls for speculation.

20 THE WITNESS: I would answer that the same way I 08:53:19  
21 did before, that that depends on context. So here we're  
22 referring to what Matt Jonkman is calling a command and  
23 control session. It's not clear from this simple email  
24 that he's referring to that type of a command and control  
25 session at all. That's why I would need more time to 08:53:37

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1 analyze.

2 Q. BY MR. DONOVAN: Is it your understanding that a  
3 command and control session gives an attacker command and  
4 control of a compromised computer?

5 A. Generally speaking, that's true. But, again, to 08:53:52  
6 refer to now what Matt Jonkman is talking about would  
7 require more analysis. And then if we then refer back to  
8 the Snort rules that he contributed, none of them have  
9 any application to that generally.

10 Q. I'm sorry. What was the last thing you said? 08:54:17

11 A. "Generally."

12 Q. Does this exhibit, Exhibit 2017 -- I'm sorry,  
13 2018, does it refer to the rule with SID 2003021?

14 A. Actually, I interpreted it to be that this is  
15 referring to the full body of contributions he was making 08:54:55  
16 of which that rule is a part of, which is why I cite to  
17 Exhibit 1020 from pages 107 to 109.

18 Q. And what's your -- your basis for concluding  
19 that he's referring to the body of rules, including rule  
20 2003021, in this Listserv message? 08:55:11

21 A. Because this -- because this --

22 THE WITNESS: Was there an --

23 Yeah, so because the -- the general comments  
24 here about targeting high ports over 8081 also appears on  
25 those pages of Exhibit 1020. 08:55:30

1 Q. BY MR. DONOVAN: Exhibit 1018 doesn't making any  
2 specific reference to Rule 2003021, does it?

3 A. Not specifically. Other than that it has this  
4 matching language that we also see in Exhibit 1020, from  
5 pages 107 to 109. 08:55:57

6 Q. And "the matching language," are you referring  
7 to the policy SSL TLS on high port?

8 A. And also he's even -- in his comments, talks  
9 about -- and this is really strong evidence because he  
10 says in the email this is about high ports that are over 08:56:14  
11 8081, but the rules actually don't use that number, 8081.  
12 So that provides additional evidence that -- that he's  
13 referring to those rules. Because that's the comments he  
14 gave for those rules.

15 Q. When you say "those rules," what are you 08:56:36  
16 referring to?

17 A. That -- that range of rules that's on page 107  
18 to 109. If you want to bring up Exhibit 1020, I can be  
19 more specific.

20 Q. Sure. 08:56:51

21 MR. DONOVAN: Jon, let's go ahead and bring up  
22 Exhibit 1020.

23 THE WITNESS: And this is part 2, as I recall.

24 Q. BY MR. DONOVAN: I think we have the entire  
25 exhibit as one part here. Maybe this is -- well, let's 08:57:01

1 go to page 79 -- sorry, page 40 of the PDF.

2 A. Can you upload the exhibit to Exhibit Share,  
3 please?

4 Q. Yeah, we will do that.

5 MR. MATTHEWS: Give me just a moment here. Just 08:57:41  
6 a moment.

7 MR. DONOVAN: I think, actually, we'll be going  
8 to page 107 of the PDF.

9 Q. And, Dr. Goodrich, if you need a different page,  
10 feel free to navigate to it, but I think that might save 08:57:52  
11 you time.

12 MR. MATTHEWS: It's taking a moment to upload  
13 due to size. It should be available now.

14 THE WITNESS: I am there.

15 Q. BY MR. DONOVAN: All right. And if you go to -- 08:58:44  
16 I think it's -- page 107 of the PDF might be what you're  
17 looking for.

18 A. Exactly, yeah. I'm there.

19 Q. And so, Dr. Goodrich, what are you looking at?

20 A. I'm looking at -- for example, at the very 08:59:01  
21 bottom of page 107, we see that matching language,  
22 "TLS/SSL State Machine for 8081 and up," is a comment.

23 And then it has similar language that we see  
24 from that email about sslv2, SSLv3, and so on.

25 MR. DONOVAN: All right. And, Jon, could you go 08:59:34

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1 down -- well, that's all on that.

2 Q. Let's go -- in your declaration, you refer to  
3 pages 107 to 109 and SIDs 2003026 to 2003021.

4 A. That's right.

5 Q. Let's go to SID 2003026 on page 107. I think 08:59:54  
6 it's the sixth down from the top.

7 A. I'm there.

8 Q. And this has the comment before the rule,  
9 "TLS/SSL State Machine for 8081 and up."

10 That's the comment you were just referring to; 09:00:16  
11 right?

12 A. Correct.

13 Q. And do you have an understanding of what this  
14 rule does?

15 A. Let's see. Well, first of all, as with many of 09:00:23  
16 these rules, this one is commented out so it doesn't do  
17 anything. So did you want to rephrase your question?

18 Q. If -- well, this is a ruleset that someone would  
19 download as a file of rules; right?

20 A. Correct. And I think they're all commented out. 09:00:44  
21 So they would literally do nothing. All of them.

22 Q. Right.

23 So could these -- could someone uncomment this  
24 rule and load it into a Snort system?

25 A. Perhaps, but there may be syntax there. As I've 09:00:57

1       noted in my declaration, sometimes these commented rules  
2       have syntax errors and that even when you uncomment, you  
3       remove the comment, pound sign, they still may be  
4       nonfunctioning.

5           Q.   Are you able to understand what this rule was           09:01:14  
6       created to do, if it was uncommented and loaded into a  
7       Snort system?

8           A.   The rule of 2026, assuming that it does not have  
9       any syntax errors, I believe I can interpret that.

10          Q.   And you said 2026?                                   09:01:34

11          A.   I mean 3026.   Excuse me.

12          Q.   Thank you.

13               And what do you interpret this rule as intended  
14       to do?

15          A.   In this case, it is looking for packets that           09:01:43  
16       have a TCP protocol, have a source address that matches  
17       to a home net address on any port and then has a  
18       destination address that matches to any address in the  
19       external net set and is on port 443.

20               Then it then is looking for -- that it is a part       09:02:13  
21       of an SSL known port, which in this case is that 443  
22       known port.

23          Q.   And does this result in SSL traffic on port 443  
24       being excluded from SSL alerts?

25          A.   This would not.   This would do the opposite.       09:02:42

1 This would alert on any SSL traffic. If you uncommented  
2 it. Now, it would alert it based on this -- oh, no. Now  
3 it's no alert for the flowbits. Sorry. I missed that  
4 point.

5 Q. You read my next question. 09:03:04

6 What does the flowbits no alert do?

7 A. Yeah, I'm sorry. I had overlooked that.

8 That that then does a no alert for the packets  
9 that match this rule.

10 Q. So if a packet triggered this rule, it would 09:03:18  
11 cause the system not to alert because the rule is on --  
12 because the packet is on a known SSL port, 443; is that  
13 correct?

14 A. That is how I interpret this rule, yes.

15 Q. And so would you understand this as identifying 09:03:35  
16 a good SSL or TLS session?

17 A. Depends what you mean by "good." So if by good  
18 you mean is it using the correct port number, then yes.

19 If by good you mean that this is trying to protect  
20 against an exfiltration, then no. Because this would 09:03:55  
21 allow for an exfiltration so long as it's using port 443.  
22 And it would not alert or block on an exfiltration in  
23 such an instance.

24 Q. So independent of the version of SSL or TLS  
25 used, this would not alert or block if the -- the 09:04:17

1 communication was on port 443 -- or to destination port  
2 443; is that right?

3 A. That is correct.

4 Q. Let's go down to the next rule.

5 And this is SID 2004598. 09:04:33

6 Do you see that, Dr. Goodrich?

7 A. I do.

8 Q. And do you understand what the purpose of this  
9 rule is, if it was uncommented out and loaded into a  
10 Snort system? 09:04:51

11 A. Assuming that the syntax is correct and then you  
12 remove the pound sign at the beginning, my understanding  
13 is that this would not alert if the packet has -- is a  
14 part of an SSL session that is going to a destination  
15 using port 9001. 09:05:15

16 Q. And would you understand this to be a rule  
17 referenced in Exhibit 2018 that we were referring to, the  
18 Mr. Jonkman Listserv note?

19 A. I do because it has that kind of language that  
20 matches his email about port 8081 and up. And, you know, 09:05:32  
21 some of this other language that we see in that email.

22 Q. Would this match -- the email said, "Having a  
23 working string of sigs to identify a good SSL or TLS  
24 session."

25 Would you understand this to be another rule to 09:05:59

1 identify a good SSL or TLS session?

2 A. Yes, depending on what you mean by "good." So  
3 if by good you mean is it using a port number that  
4 Mr. Jonkman had identified as being a legitimate reason  
5 to use SSL, then yes. 09:06:17

6 But if by good you mean does it protect against  
7 exfiltrations, then the answer is no. Because now if  
8 your bot is using port 9001, it can exfiltrate all at  
9 once, and this rule will not trigger any alert.

10 Q. The next rule down has SID 2003027. 09:06:40

11 Do you see that?

12 A. Yes.

13 Q. And is this rule designed to, if run by a Snort  
14 system, not alert for SSL traffic on port 8000?

15 A. I agree, assuming the syntax is correct and you 09:07:05  
16 remove the pound sign at the beginning.

17 Q. And so this would mean that any SSL traffic on  
18 port 8000 would not cause an alert, independent of the  
19 version; is that right?

20 A. Correct. 09:07:22

21 Q. Let's go down to the next rule, 2003028.

22 Do you see that, Dr. Goodrich?

23 A. I do.

24 Q. And this rule, similarly if run on a Snort  
25 system, would cause the system to not block SSL traffic 09:07:39

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1 on -- or to destination port 8080; right?

2 MR. PRICE: Objection.

3 THE WITNESS: Again, assuming that you remove  
4 the pound sign, because if you don't it won't function at  
5 all, and that there's no additional syntax errors, I 09:07:53  
6 agree.

7 Q. BY MR. DONOVAN: All right. The next rule is  
8 2003029.

9 And is it correct that this rule indicates that  
10 SSL traffic on port 8200 will not trigger an alert 09:08:12  
11 independent of the SSL version?

12 A. I would answer that the same way before. First,  
13 it's commented out so it's non-functional. Then if you  
14 remove the pound sign and there's syntax errors, which I  
15 cannot immediately determine, then it would have that 09:08:34  
16 functionality.

17 Q. And if we look -- I'm going to try to speed this  
18 up, but if I go through a list of rules, can you tell me  
19 if they have the same functionality?

20 A. Yes. 09:08:52

21 Q. 2003030.

22 A. I see that on my screen, yes. And that has  
23 similar -- I would give that a similar answer but now  
24 with respect to port 8443.

25 Q. Okay. And the next rule is 2003031. 09:09:13

1           Would you give a similar answer, except with  
2   regard to port 5222?

3           A.   Correct.

4           Q.   The next is rule 2003032.

5           And would you give that same answer, except with       09:09:28  
6   respect to port 5223?

7           A.   Yes.

8           Q.   The next is rule 2003033.

9           Would you given the same answer, except with  
10   regard to port 2967?                                               09:09:44

11          A.   Yes.

12          Q.   The next is rule 2003035.

13          Would you give the same answer but with respect  
14   to port 3128?

15          A.   Yes.                                                       09:09:59

16          Q.   And the next is rule 2003036.

17          Would you give the same answer, except with  
18   regard to port 8080?

19          A.   Yes.

20          Q.   The next is rule 2003037.                               09:10:11

21          Would you give the same answer, except with  
22   regard to port 8292?

23          A.   Yes.

24          Q.   The next is rule 2003038.

25          Would you give the same answer, except with               09:10:24

1 regard to port 8294?

2 A. Yes.

3 Q. The next is rule 2003034.

4 Would you give the same answer, except with

5 regard to port 1521?

09:10:35

6 A. No. I think you got the SID number wrong.

7 Q. Is that -- oh, sorry. 2003039.

8 And would that be the same -- no, I think it is

9 20 -- 2003934; is that correct?

10 A. Yeah, that's the number.

09:11:10

11 Q. And that would be the same answer, except with

12 regard to port 1521?

13 A. Yes.

14 Q. And then for rule with SID 2008543, would that

15 be the same answer, except with regard to port 995?

09:11:28

16 A. Yes.

17 Q. All right. And with that, I think we've been

18 going for a little over an hour. Why don't we take a

19 break for a few minutes.

20 A. Okay.

09:11:41

21 (Recess.)

22 THE REPORTER: We're back on the record,

23 9:26 a.m.

24 Q. BY MR. DONOVAN: All right. Dr. Goodrich, we're

25 going to go back to Exhibit 1020. And we just left off

09:27:01

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1 going through rule 2008543.

2 So let's go to the next one. We're on page 108  
3 and rule 2003002.

4 Do you see that?

5 A. I do. 09:27:16

6 Q. And what does this rule do if it was loaded into  
7 a Snort system?

8 A. First of all, like these other rules, it's  
9 commented out so it would do literally nothing. But if  
10 by your question you're saying if somebody would then 09:27:34  
11 remove the pound sign, and assuming there's no syntax  
12 errors in this rule -- it's a little different. So now  
13 it's going to be matching and alerting to any TCP packet  
14 whose source address is included in the home net as any  
15 port number and is going to a destination address 09:27:58  
16 included in the external net collection. And then has a  
17 port number that is between 1024 and 65535.

18 And then has a number of other things. The  
19 content now has to match at depth 3. The binary  
20 signature 16 03 01, for example. 09:28:24

21 Q. And do you see where it says,  
22 "flowbits:isnotset, BS.SSL.Known.Port"?

23 A. Yes.

24 Q. Do you have an understanding of what that means?

25 A. I'm not recalling exactly, but it appears from 09:28:43

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1 context that it's -- that there is this flag that then is  
2 not set, BS.SSL.Known.port. Or it's -- it's indicating  
3 that this is -- this is -- is not set for that -- that  
4 parameter.

5 Q. What do you mean by that? 09:29:10

6 A. That this is -- a part of flowbits is indicating  
7 the "isnotset" for that BS.SSL.Known.Port. And then  
8 there's another one also, isnotset.BS.SSL.Client.Hello.

9 Q. And what is a -- well, let's go back to the  
10 message. It says, "ET POLICY TLS/SSL Client Hello." 09:29:41

11 What is a "TLS/SSL Client"?

12 A. So in order to initiate an SSL session, there  
13 has to be a handshake, as we call it, that begins with a  
14 hello message. In this case, the hello message comes  
15 from the client. But it is on what the author of this 09:30:01  
16 rule is indicating is an unusual port.

17 Q. So is this rule triggering when there's a -- a  
18 packet to an unusual port, a port between 1024 and 65535,  
19 for a client hello of an SSL or TLS session?

20 A. That's how I interpret this message, yes. 09:30:30

21 Q. And do you know what version of SSL or TLS this  
22 is checking for?

23 A. I believe it looks like it's version 3, but I'd  
24 want to study that more carefully to answer fully.

25 Q. And the next rule, 2003003. 09:30:52

1 Do you see that?

2 A. Yes.

3 Q. Is that rule the same, other than it's checking  
4 different content?

5 A. Yes, it has slightly different content that it's 09:31:10  
6 matching against.

7 Q. And what's the difference in the content there?

8 A. In the first one, it's looking for binary  
9 signatures, such as 16 03 01. And in the second one,  
10 it's 16 03 00. 09:31:28

11 Q. And it's looking at those in the first several  
12 bits of the packet; is that right?

13 A. Yes. Yes, that's correct.

14 Q. And this is also checking for a client hello to  
15 initiate a TLS or SSL session; is that right? 09:31:47

16 A. It would match such a thing. I don't know if --  
17 there could be some other false positives as well, but it  
18 would match -- my -- my belief is that it would match  
19 such a message.

20 Q. Okay. The next two rules, which are 2003004 and 09:32:02  
21 2003005, do those also match client hellos to initiate an  
22 SSL or TLS session on a high port?

23 A. Again, they're commented out, so they do  
24 literally nothing, but if you remove the pound sign, and  
25 assuming there's no syntax errors, that does appear to be 09:32:33

1       what they're doing.

2           Q.   All right.

3           A.   As well as they would match anything that has  
4       those content values, those -- just those few bit sets --  
5       those numbers, so there could also be many false                   09:32:45  
6       positives, as with all of these now that we've been  
7       talking about since the break.

8           Q.   And from the message field, would you understand  
9       that the purpose of them is to detect the client hello,  
10      although there may be false positives?                   09:33:00

11          A.   I believe that was the intent, based on the  
12      message comment field.

13           MR. DONOVAN:   And, Jon, could you bring up the  
14      next four rules?

15          Q.   So, Dr. Goodrich, we're on page 109 now.   And do       09:33:13  
16      you see Rule 2003006?

17          A.   I do.

18          Q.   What does this rule do?   Or if this was loaded  
19      into a Snort system and enabled, what would you  
20      understand this rule to do?                   09:33:27

21          A.   So as with the others, it's commented out, so it  
22      would do nothing, but if you removed the pound sign, and  
23      assuming there's no syntax errors, this is now matching  
24      for TCP packets that have a source address that is  
25      included in the home net, have a destination address       09:33:46

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1     that's included in the external net, and a port number  
2     between 1024 and 65535, and now have a -- content that is  
3     16 03 01, another content that's a 10 at a different  
4     position, and now has the BS.SSL.Client.Hello as being  
5     isset. 09:34:22

6           Q. And so is this checking the first several bits  
7     of the packet for the content 10 and the content 16 03  
8     01?

9           A. Assuming it is -- remove the comment and there's  
10    no syntax errors, I agree. 09:34:46

11          Q. And this would be checking an application  
12    packet; right?

13          A. That depends on the context. This is just  
14    matching for certain bits. As I said, there could be  
15    many false positives. 09:35:03

16          Q. Right. But what would you understand this to be  
17    matching against? It's not matching TCP packets; right?

18          A. It is matching TCP packets. It's just matching  
19    very specific positions in them, so like we said in the  
20    first, looks like, six bits, you have to have 16 03 01 09:35:19  
21    and then a 10.

22          Q. And it refers to a TLS SSL client key exchange.  
23    Do you have an understanding of what that is?

24          A. Yes, but now this is just referring to the  
25    comments for what it is -- the author of this was -- was 09:35:38

1 identifying.

2 Q. What is a SSL -- sorry -- TLS SSL client key  
3 exchange?

4 A. So it's a part of the handshaking protocol for  
5 SSL and TLS. We talked about earlier today there's a 09:35:55  
6 hello message. That is then followed by messages between  
7 the -- what we would call the client and the server,  
8 where they exchange keys, that is secret keys, cypher  
9 text keys, to then -- then would be using to encrypt the  
10 session and derive session keys that then would be used 09:36:20  
11 for encrypting packets.

12 Q. Would you understand that this rule was intended  
13 to be used to identify the initiation of SSL and TLS  
14 sessions where there's the client key exchange?

15 A. I believe that was the intent of this message, 09:36:41  
16 based on the context.

17 Q. And I just asked a number of questions about  
18 Rule 2003006. Would you have the same answers for Rules  
19 2003007, 2003008 and 2003009, other than checking  
20 different content? 09:37:03

21 A. Yes. They're looking for different content bits  
22 at the initial parts of a packet, and then it states that  
23 its purpose is to be identifying packets that would be  
24 part of the client key exchange for SSL or TLS, but, of  
25 course, it would also match any packets that simply have 09:37:26

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1       those bits set in the ways that are being specified.

2               And again, as before, these are commented out,  
3       hence they would do nothing as written.

4               Q.   And to load them into a Snort system so they  
5       would work, you would have to take that comment out and       09:37:44  
6       then import this into the Snort system; right?

7               A.   That is correct.   And assuming that there's no  
8       syntax errors.

9               MR. DONOVAN:   Jon, could you bring up the next  
10       two rules?                                                       09:37:57

11              Q.   And, Dr. Goodrich, we now have up Rules 2003010  
12       and 2003011.   The comments before these rules say,  
13       "Server Hello."

14              Do you have an understanding of what the TLS SSL  
15       server hello is?                                               09:38:17

16              A.   So there's -- again, part of this protocol that  
17       sets up an SSL session, it can include a server hello  
18       that comes back to the client.

19              Q.   So this would also be part of initializing an  
20       SSL or TLS session?                                           09:38:33

21              A.   That could have that -- it would match such  
22       packets, as well as others.

23              Q.   Okay.   And can you explain the -- how this --  
24       these two match against the 5-tuple of a packet?

25              A.   Sure.   So again, they're commented out, so they       09:38:49

1 would do nothing, but if you remove the pound sign, and  
2 assuming there's no syntax errors in the rule, this would  
3 match a packet whose source address is included in the  
4 external net and has ports -- a port number between 1024  
5 and 35535 and is going into with the source address -- 09:39:09  
6 no, a destination address, rather, that is included in  
7 the home net list of addresses on any port.

8 Q. And what do you understand this rule to do?

9 A. As I mentioned earlier, it does literally  
10 nothing, but if you remove the pound sign, and assuming 09:39:35  
11 there's no syntax errors, it would then allow -- because  
12 it has the no alert for the flowbits, it appears that it  
13 would then allow this packet to come in.

14 Q. And that would be triggered based on checking  
15 the first several bits of the packet to determine if it 09:40:05  
16 has content for the first Rule 16 03 01 and then a few  
17 bits later 02; is that right?

18 A. That's right, so based on that. But then it has  
19 the flowbits no alert, so even though it's an alert at  
20 the beginning, it has the flowbits no alert set, so I'm 09:40:24  
21 not sure why he even included this, to be honest with  
22 you. Why bother?

23 Q. And those answers would be the same for the next  
24 rule, 2003011, other than different content and a  
25 different message; is that right? 09:40:43

1 A. That is correct.

2 MR. DONOVAN: Okay. Jon, could you bring up the  
3 next six rules?

4 Q. And, Dr. Goodrich, we'll start with Rule  
5 2003012.

09:40:59

6 Do you see that here?

7 A. I do.

8 Q. And this refers to the -- the comments before  
9 this six rules all say, "Server cert and key exchange."

10 Do you understand these rules to also relate to  
11 initializing an SSL or TLS session?

09:41:11

12 A. I believe that was the intent of the author, but  
13 it would match any -- again, they're commented out, so  
14 they do nothing. And then some of these rules even have  
15 a double comment out, which is weird. And then -- yeah,  
16 they would match, assuming there's no syntax errors, any  
17 packets that are coming from a source that is external  
18 and in the range of ports from 1024 to 65535 and coming  
19 to a destination address in the home net on any port, and  
20 then would be -- and then match these various patterns of  
21 a few bits here and there in the beginning that are  
22 specified in each of these rules, like 16 03 00.

09:41:30

09:42:08

23 Q. And that would be, again, checking the first  
24 several bits of the packet for that content; is that  
25 right?

09:42:27

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1           A. I agree.

2           Q. And these relate to initializing an SSL or TLS  
3 session; is that right?

4           A. I believe that was the intent of the author,  
5 based on the message field, but they would, of course,           09:42:38  
6 match anything that has those bits and, hence, would also  
7 be subject to false positives.

8           Q. And you noted the double commenting out of the  
9 last two rules here -- or shown here. They include a  
10 message that indicates deleted. Would you understand the       09:43:00  
11 intention of those rules to be that those were marked for  
12 deletion?

13          A. These last two rules are a little more  
14 troubling, because they have the double commenting out,  
15 which is unusual, and a person of ordinary skill in the       09:43:42  
16 art would interpret that to mean that this is  
17 potentially, you know, wrong or bad or there's some  
18 troubling issues here.

19               And additionally, these have the flowbits set to  
20 be no alert, as with the previous ones also have flowbits       09:44:05  
21 set to no alert, so there would be no alert for the rules  
22 2003014 through 2003017, so it's not clear why the author  
23 of this rule is even including this.

24          Q. Let's go down to the next two rules. These are  
25 SID 2003018 and 2003019. And they have a comment before       09:44:35

1       them, "Server Cipher Set."

2               Do you see that?

3       A.   I do.

4       Q.   Do you have an understanding of what TLS SSL

5       server cipher set refers to?

09:44:51

6       A.   I'm not recalling, as I sit here today, what

7       that is referring to, per se. I presume it's part --

8       it's intended to be part of the SSL handshake that we

9       talked about earlier today.

10       Q.   And these rules would also, if enabled and

09:45:08

11       loaded into a Snort system, would check first whether the

12       packets satisfy the -- or match the 5-tuple set forth in

13       this rule; right?

14       A.   They are also commented out with a single pound

15       sign, hence they do nothing. If you remove that pound

09:45:27

16       sign, and assuming there's no syntax errors, then they

17       would match any time a packet is coming with a source

18       address in the external net with a port between 1024 and

19       65535 as a source address -- a destination address,

20       rather, that's in the home net on any port, and then has

09:45:52

21       to match certain bits in the beginning. But then these

22       rules also have the flowbits no alert indicated as well.

23       Q.   All right. Then let's go to the next two.

24       "Application data stream" comments are before the next

25       two rules. Do you have an understanding of what

09:46:18

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1 application data stream means?

2 A. In this context, I believe that the author  
3 intended that this is referring to now content that is  
4 being sent as a part of an established SSL connection,  
5 but, of course, it would also -- it is also commented 09:46:39  
6 out, so it would do nothing, but if you remove the pound  
7 sign, then it would match any packet that is coming from  
8 the home net on any port and has a destination that's  
9 included in the external net in the port range from 1024  
10 to 65535 and matches the certain bits, like 17 03 01 in 09:47:00  
11 the beginning.

12 Q. And that's true of both of these rules, but they  
13 have different content that they'll be matching at the  
14 first few bits within the packet; is that right?

15 A. Yes, I agree. 09:47:21

16 Q. All right. Let's bring back up your  
17 declaration, Exhibit 2010, and could we go to paragraph  
18 79? It's on page 40.

19 A. I'm there.

20 Q. Here you say your opinion is that -- is 09:47:47  
21 reinforced when Rule 2003021 is read in context with the  
22 other rules of the same ruleset.

23 Do you see that?

24 A. Yes.

25 Q. Would a person of ordinary skill in the art read 09:48:01

1 Rule 2003021 in context of the other rules in the  
2 Emerging Threats ruleset?

3 A. They may. That's why I'm referring to that in  
4 this paragraph 79.

5 Q. And is it correct that other rules in the 09:48:19  
6 Emerging Threats ruleset exclude SSL traffic on various  
7 ports from generating SSL alerts regardless of the SSL  
8 version?

9 A. Yes. And even this rule, taken in isolation, is  
10 allowing for packets on -- to -- for -- such as 09:48:38  
11 exfiltration packets to occur, and it would not flag them  
12 so long as they're using a port number that is excluded  
13 from the range of Rule 2003021.

14 And then I refer to a number of other rules that  
15 also exclude certain ports that then further supports my 09:49:06  
16 conclusion that this rule is not doing anything to  
17 protect against exfiltration.

18 Q. While there might be some packets that are on  
19 those ports, if exfiltration was being performed using  
20 SSLv3 on a high port, would it trigger this rule? 09:49:31

21 A. So if you're asking -- generally, if a packet is  
22 using SSL on a high port that is not excluded, then it  
23 will alert. Again, this rule doesn't do anything, and  
24 then if you take away the pound sign, it would simply  
25 alert but not block any packets that match the rule. 09:50:00

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1 Q. Dr. Goodrich, is it your opinion that a person  
2 of ordinary skill in the art would not be able to find  
3 the Emerging Threats rules, Exhibit 1020, on the Emerging  
4 Threats website?

5 A. Generally, they would not be able to find it 09:50:23  
6 just on their own, just looking in the standard ways of  
7 indexes that index information. They would additionally  
8 not be able to do any kind of searches among the over  
9 11,000 rules to focus in on specific rules that they  
10 would be interested in, in my opinion. 09:50:49

11 Q. In your analysis, did you go to the Emerging  
12 Threats website on the Wayback Machine to try to locate  
13 the Emerging Threats rules?

14 A. Yes.

15 Q. And what was the results of that? 09:51:02

16 A. I recall having seen the -- the content. In  
17 fact, I think I have an excerpt of that.

18 Yes. So if you go to paragraph 48 and then go  
19 to page 25 in my declaration, you will see, I'm showing  
20 now from Exhibit 1030 as well as Exhibit 1054, what that 09:51:48  
21 website would look like at that time, which just has  
22 these folder names that are even identified in a way that  
23 the alleged rule that Petitioner raised is in a strange  
24 name that would not be, in my opinion, what a person of  
25 ordinary skill in the art would click, even based on the 09:52:27

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1 name in searching for a rule to, say, protect against  
2 exfiltrations.

3 Q. Let's go back a few paragraphs to paragraph 46  
4 of your declaration. It's on page 23.

5 A. I am there. 09:52:48

6 Q. And a few lines up from the end of that  
7 paragraph you say, "Emerging Threats provided a number of  
8 files, and each file was associated with a particular  
9 rule category."

10 Do you see that? 09:53:02

11 A. Right.

12 Q. And you refer to Exhibit 2016. Do you recall  
13 what you're referring to there?

14 A. Could you bring up Exhibit 2016?

15 Q. Sure. 09:53:17

16 MR. DONOVAN: Jon, could you bring up  
17 Exhibit 2016?

18 Q. So this is Patent Owner's Exhibit 2016. Do you  
19 know what this document is?

20 A. Did you put it on the Exhibit Share? 09:53:30

21 MR. MATTHEWS: Just a moment. It's uploading  
22 now. Just a moment.

23 It's now available.

24 Q. BY MR. DONOVAN: Were you able to see it on the  
25 Exhibit Share, Dr. Goodrich? 09:54:14

1 A. I'm downloading it now.

2 I have it in front of me now.

3 Q. Okay. And my question is: What do you  
4 understand this document to be?

5 A. So this is a printout from the Wayback Machine 09:54:24  
6 going to July of 2010 of the emergingthreats.net view all  
7 rulesets, and then it has various links in the PDF.  
8 They're just underlined, colored names that then have  
9 different names associated with different rulesets.

10 Q. Where did you get this document? 09:55:06

11 A. This document, as I recall, was provided to me.

12 Q. And did you try navigating to this page on the  
13 Wayback Machine?

14 A. I don't recall, just sitting here today, if I  
15 did that or not. 09:55:20

16 Q. Do you see the heading "All Rules in one file"?

17 A. Yes.

18 Q. And under that heading there's a link that says,  
19 "emerging-all.rules."

20 Do you see that? 09:55:38

21 A. I do.

22 Q. What do you understand that to show?

23 A. Just that, that this is a link to what would --  
24 then would be all rules.

25 Q. And that would be all of the Emerging Threats 09:55:48

1 rules in a document?

2 A. It may be. I'd want more time to confirm that.

3 Q. Do you have any reason to believe that that  
4 would not allow a user to download all of the Emerging  
5 Threats rules? 09:56:01

6 A. I would want more time to be able to answer that  
7 question.

8 Q. Let's go back to Exhibit 2010, your declaration.

9 A. I'm there.

10 Q. And back on page 48, which is on PDF -- sorry -- 09:56:18  
11 paragraph 48, which is on PDF page 24.

12 A. I am there.

13 Q. About six lines into this paragraph you say, "I  
14 was unable to find any evidence that the Emerging Threats  
15 rules website had any functionality, such as a search 09:56:34  
16 field and a search button."

17 Do you see that?

18 A. Yes.

19 Q. And did you go to the Emerging Threats website  
20 on the Wayback Machine to investigate whether it had any 09:56:45  
21 search functionality?

22 A. Yes, that's my recollection.

23 Q. You did go to the Emerging Threats website on  
24 the Wayback Machine and you determined that there was no  
25 search functionality on the website? 09:56:56

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A. That's my recollection, as I sit here today, based on, yeah, the links we have on the next page of my declaration.

MR. DONOVAN: Jon, could you bring up Patent Owner's Exhibit 2029 and load it in the portal?

MR. MATTHEWS: It should now be available.

Q. BY MR. DONOVAN: Dr. Goodrich, do you recognize this document?

A. I'm not immediately recalling this document, as I sit here today.

Q. Do you recall reviewing this document in forming your opinions set forth in your declaration?

A. I'm not immediately recalling, as I sit here today. Is there a place in my declaration where you feel I've addressed this?

Q. I believe this is in your exhibit list and not otherwise mentioned in your declaration, but you're welcome to check to confirm.

A. And where do you see my exhibit list in my  
declaration?

Q. I'm sorry. I guess perhaps you don't have an exhibit list. Your declaration at paragraph 5 says, "I've also reviewed the papers and exhibits and" -- I'm sorry -- "I've reviewed the papers, Petitioner's exhibits, and Patent Owner's exhibits filed in this

1 proceeding."

2 Would that include this exhibit?

3 A. I am not immediately recalling, as I sit here  
4 today. It probably did, but I'm not specifically  
5 recalling this. 09:59:03

6 Q. So you don't specifically -- you don't  
7 specifically recall navigating to the links in this  
8 exhibit?

9 A. Not as I sit here today.

10 Q. Is there any reason you didn't review this 09:59:16  
11 exhibit that you're aware of?

12 A. That question -- I don't understand your  
13 question.

14 Q. This is a Patent Owner's exhibit in this IPR  
15 that I understand you don't recall reviewing; is that 09:59:35  
16 right?

17 A. I don't recall, as I sit here today, reviewing.  
18 I listed in my paragraph 5 that I did review these  
19 exhibits. I'm just not recalling it, as I sit here  
20 today. 09:59:45

21 MR. DONOVAN: All right. Jon, could you go to  
22 the second page and scroll about halfway down?

23 Q. And, Dr. Goodrich, do you see where there's a  
24 link that says, "archive.org/" and then  
25 "20090703171542/www.emergingthreats.net"? 10:00:13

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1 A. I see that, yes.

2 Q. Did you navigate to that link before forming  
3 your opinions?

4 A. I don't recall, just sitting here today.

5 Q. Do you see the portion of this that says, 10:00:26  
6 "www.emergingthreats.net"?

7 A. Yes.

8 Q. What do you understand that to be?

9 A. The website for Emerging Threats.

10 Q. And did you navigate to the website, to Emerging 10:00:38  
11 Threats, on the Wayback Machine when forming your  
12 opinions?

13 A. I did. I just don't recall if it was this one.  
14 The one I cite in my declaration is a 2010 version, as I  
15 recall. 10:00:54

16 Q. Okay.

17 A. Actually, if you could bring up Exhibits 1030  
18 and 1054, I could say more definitively. I'm just not  
19 recalling the dates, as I sit here today.

20 Q. Sure. We can bring up 1030. 10:01:13

21 Do Exhibits 1030 and 1054 indicate the Emerging  
22 Threats websites that you reviewed?

23 A. It's what I'm citing in my declaration. So  
24 that's why I'm asking for those exhibits.

25 MR. DONOVAN: All right. Let's bring up 1030. 10:01:29

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1 Q. Dr. Goodrich, which page would you like us to go  
2 to?

3 A. Is that also in the Exhibit Share?

4 Q. I believe it's loading.

5 MR. MATTHEWS: It's still -- looks to be 10:02:02  
6 dragging just a bit. It may be a larger file size here.

7 Q. BY MR. DONOVAN: And, Dr. Goodrich, what was the  
8 other exhibit you asked for so we can load that up?

9 A. Oh, sure. The other one was 1054.

10 Q. Okay. 10:03:01

11 MR. DONOVAN: Jon, could you bring that one to  
12 the Exhibit Share as well?

13 MR. MATTHEWS: Sure. Looks like it's just  
14 taking a while because it's such a large size file here.

15 I'll get the other one loaded as well, 1054. 10:03:14  
16 Let's give it a few moments.

17 Q. BY MR. DONOVAN: Dr. Goodrich, I now see 1054 in  
18 the portal, so do you want to go to that one first?

19 A. Sure.

20 MR. MATTHEWS: It looks like 1030's still 10:03:46  
21 uploading. I may cancel and try it again here. Perhaps  
22 it's just frozen.

23 Q. BY MR. DONOVAN: Okay. Dr. Goodrich,  
24 Exhibit 1054 is up. Does this help refresh your  
25 recollection as to what you reviewed on the Wayback 10:04:16

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1 Machine?

2 A. Yes. So this is a more recent version of that  
3 same web page, not from the Wayback Machine, that shows  
4 even in modern times there's no indexing feature or  
5 searching feature on this web page.

10:04:37

6 Q. And this is looking at the web page as it would  
7 have existed in modern times in 2022; is that right?

8 A. That's correct.

9 Q. All right. We can move on to a different topic  
10 while 1030 is being uploaded and come back to it.

10:05:01

11 MR. DONOVAN: Let's bring Exhibit 1020 up again,  
12 which is the Emerging Threats reference. And, Jon, could  
13 you go to page 67 of the PDF and scroll to the bottom of  
14 the page?

15 Q. And, Dr. Goodrich, do you see the second-to-last  
16 Snort rule on the page with SID 2003533?

10:05:26

17 A. What page are we on again?

18 Q. Page 67 of the PDF.

19 A. I am there. And then we're at 2003533?

20 Q. Yes.

10:05:50

21 And this is not a rule you addressed in your  
22 declaration, but I want to ask you some questions about  
23 it to understand your understanding of Snort rules.

24 What was -- what does this rule match against  
25 for the 5-tuple of the packet?

10:06:06

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1           A. So this is going to match any packet initially  
2 looking at a TCP packet whose source address is in the  
3 home net list on any port and whose destination address  
4 is in the external net list and whose port number is  
5 included in the HTTP ports list. 10:06:40

6           Q. And are the IP addresses and the port numbers,  
7 those are packet header field values?

8           A. I agree.

9           Q. The message says, "ET MALWARE Sytes.net Related  
10 Spyware Reporting." 10:07:09

11           Do you see that?

12           A. I do.

13           Q. What's spyware?

14           A. Generally speaking, spyware is malicious  
15 software that is spying on a computer. 10:07:19

16           Q. What do you mean it's spying on a computer?

17           A. That it's looking for things that are occurring  
18 or files that exist on the computer.

19           Q. And is it if an attacker was running spyware,  
20 would they be receiving information from the computer? 10:07:43

21           A. I'm not following your question. Sorry.

22           Q. How does spyware work?

23           A. There's -- that's a huge, broad category of  
24 things. There's so many different ways. Can you be more  
25 precise? 10:08:00

1 Q. Does spyware send information from an attacked  
2 computer to an attacker?

3 A. It may.

4 MR. PRICE: Objection. Foundation.

5 THE WITNESS: I mean, it depends on the context, 10:08:10  
6 what you mean by spyware and how it's working.

7 Q. BY MR. DONOVAN: Is there a general purpose of  
8 spyware?

9 A. Again, it's such a broad category. That really  
10 depends on the context. 10:08:23

11 Q. Is spyware used to steal passwords?

12 A. That's -- like I said, spyware's a very broad  
13 category. I --

14 Q. Is spyware used -- I'm sorry. I didn't mean to  
15 cut you off. 10:08:40

16 A. No, it's fine. Go ahead.

17 Q. Is spyware used to steal passwords?

18 MR. PRICE: Objection.

19 THE WITNESS: Again, it depends on the context  
20 of what you mean by spyware. Like I said, it's a very 10:08:52  
21 broad category of malicious software.

22 Q. BY MR. DONOVAN: In your opinion, would a person  
23 of ordinary skill in the art understand that spyware is  
24 used to steal sensitive information?

25 MR. PRICE: Same objection. 10:09:06

1 THE WITNESS: Same answer. It's a very broad  
2 category, and it's not necessarily looking for sensitive  
3 information.

4 Q. BY MR. DONOVAN: What other information would it  
5 be looking for?

10:09:17

6 A. It's, like I said, a very broad category, so it  
7 could just be looking for keystrokes or mouse movements  
8 even or looking at, you know, whether or not you paused  
9 over certain pictures when you're looking at Facebook,  
10 whatever.

10:09:32

11 Q. Do you see at the start of the second line where  
12 it says, "Content: 'POST '; depth:5"?

13 A. Yes.

14 Q. What do you understand that to mean?

15 A. That it's matching the string POST space at  
16 position 5 in the packet.

10:09:49

17 Q. And what is the string POST?

18 A. Just that, POST and the space.

19 Q. Is POST an HTTP method?

20 A. It -- it also is inclusive of that, but then any  
21 packet that has POST and a space would match this rule --  
22 that aspect of this rule, and it even has a no case  
23 comment -- condition as a part of that.

10:10:11

24 Q. What is the POST HTTP method?

25 A. That -- the POST HTTP method is a way to -- for

10:10:32

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1 a client to post data to an HTTP server or put -- you  
2 know, upload data, if you will, to an HTTP server.

3 Q. And is the POST HTTP method an application  
4 header field?

5 A. I believe that the patent includes that as a 10:10:56  
6 packet header field value, but here it's just the string  
7 POST and a space. It's not necessarily a packet header  
8 field value.

9 Q. And in this rule, what does the URI content  
10 match on? 10:11:18

11 A. It's looking for content in the packet that  
12 would be part of a URI that then would have that string  
13 in it.

14 Q. Thank you for correcting me.

15 Where in the packet would it find that URI? 10:11:35

16 A. In this case, I think it's anywhere. I don't  
17 see a specific designator that says where it has to  
18 occur.

19 Q. Do you know where in an HTTP packet the URI is  
20 located? 10:11:52

21 A. That depends on the context. There could be  
22 lots of ways that it occurs, and here in this rule, it  
23 appears to just be matching the URI content to have a  
24 certain string.

25 Q. Is there URI content in an HTTP application 10:12:10

1 packet header?

2 MR. PRICE: Objection. Foundation.

3 THE WITNESS: I would want to investigate that  
4 more further to be able to answer your question. I don't  
5 recall that being a question I needed to answer for my 10:12:23  
6 declaration.

7 Q. BY MR. DONOVAN: Are you familiar with HTTP  
8 packets?

9 A. Yes, generally, but then now you're asking about  
10 very specific entries and fields. I'd want to spend more 10:12:34  
11 time to analyze the structure in order to answer your  
12 question.

13 Q. What does the content :sytes.net do in this  
14 rule?

15 A. In this case, it's also no case, so it could be 10:12:51  
16 capitals or lowercase letters, and it's just looking for  
17 that string, sytes.net, anywhere in the packet.

18 Q. And that string would need to be in the packet  
19 to trigger the rule; is that right?

20 A. I agree. 10:13:14

21 MR. DONOVAN: Jon, could we go back to  
22 Exhibit 2010, which is Dr. Goodrich's declaration, and go  
23 to page 45.

24 Actually, before that, it looks like 1030 is now  
25 up in the Wayback Machine. 10:13:33

1 Q. So, Dr. Goodrich, do you want to navigate to  
2 that exhibit and let me know what you wanted to look at  
3 relating to your investigation of Emerging Threats on the  
4 Wayback Machine?

5 A. Sure. 10:13:53

6 Yeah. So if we go to page 11 in the PDF, we see  
7 the excerpt that I am excerpting, but now in a broader  
8 context of the full page, and what --

9 Q. And --

10 A. -- we see is -- sorry. 10:14:58

11 Q. Go ahead.

12 A. And what we see when we zoom into the top is  
13 that this is the Wayback Machine looking at the website  
14 <http://rules.emergingthreats.net>, and so this confirms my  
15 conclusion that there's no search or indexing 10:15:26  
16 functionality, just this list of folders, and that the  
17 folder for the rule that Petitioner is relying on, which  
18 was, I recall we were just looking at, Rule 2003021, is  
19 in the subfolder open-nogpl, that a person of ordinary  
20 skill in the art would not immediately understand what 10:16:05  
21 those letters are referring to and would be more likely  
22 to click on either the block rules or the FW that is  
23 firewall rules links rather than that one, and that's  
24 what I speak to in my declaration.

25 Q. Do you see where it says, "More information 10:16:24

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1 available at," and then there's two different websites  
2 there?

3 A. Yes, I do see that.

4 Q. What are those two websites?

5 A. One is just the Emerging Threats generally, and 10:16:36  
6 then the other one is emergingthreatspro.com, which I  
7 think we've also looked at today, and they similarly  
8 don't have, as I recall, searching or indexing  
9 functionality.

10 Q. And did you navigate to the Emerging Threats 10:16:54  
11 website generally when you were forming your opinions?

12 A. That is my recollection, as I sit here today.

13 Q. And I should ask a better question, but did you  
14 navigate to the archived version of the general Emerging  
15 Threats website from the 2010 time period when forming 10:17:12  
16 your opinions?

17 A. I don't recall the year of the capture or if it  
18 was the modern version, as I recall -- yeah, as I recall  
19 today.

20 Q. Okay. Let's go back to your declaration, 10:17:26  
21 Exhibit 2010. We'll go to page 45.

22 A. I am there.

23 Q. In paragraph 88 it starts, "In contrast, I  
24 believe that no rule in Emerging Threats is written to  
25 trigger based on the application layer header field" -- 10:17:59

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1       sorry -- "application layer header" -- yeah, "header  
2       field."

3               Do you see that?

4               A. Yes.

5               Q. How did you determine that no rule in                               10:18:08  
6       Exhibit 1020 triggers on an application header field  
7       value?

8               A. So this conclusion is based on things we've  
9       discussed today, for example, where the rules themselves  
10       are just looking for certain patterns and strings that                       10:18:23  
11       occur in certain places in a packet, and that, in my  
12       opinion, there's a potential for false positives when you  
13       do that, and that it's not necessarily going to be  
14       triggering based on application layer header field.

15              Q. Is a packets header field values, are they                       10:18:50  
16       located at the beginning of a packet?

17              A. It depends on the context.

18              Q. Can you explain that?

19              A. Some packets -- we talked about today there's  
20       different layers in the network hierarchy, such as IP,                       10:19:08  
21       layers on the -- the -- yeah, the internet layer, and  
22       then there's the transport layer. There's an application  
23       layer as well. And then different packets will have  
24       header field values that are at the very beginning, but  
25       then there could be some other ones that are later in the                   10:19:33

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1 packet as well.

2 Q. In the context of application layer, there are  
3 application layer packets; right?

4 A. Correct.

5 Q. And would application layer packets have header 10:19:45  
6 field values at the start of the packet?

7 A. It depends what you mean by "start." That's a  
8 context-dependent question.

9 Q. Can you explain that?

10 A. Sure. So if by "start" you mean just the first 10:20:02  
11 few bytes of a packet, then the answer is no. Some  
12 application layer header fields would occur much farther  
13 after that.

14 And if by "start" you mean would they generally  
15 be at the prefix of the packet, like starting at 10:20:20  
16 the beginning and going to somewhere else in the packet,  
17 that's generally how header fields work. So it depends  
18 what you mean by start.

19 Q. So would it be correct to say that an  
20 application layer packet, the header fields would be in 10:20:39  
21 the prefix of the packet?

22 A. Yes. But exactly where in that prefix depends  
23 on context.

24 Q. And following the prefix would be the payload of  
25 the packet; is that right? 10:20:56

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1 A. Generally speaking, that's usually the case.

2 Q. How did you determine that no rule in  
3 Exhibit 1020 triggers on an application header field  
4 value?

5 A. I would answer that the same way I did before, 10:21:12  
6 namely that the rules are triggering based on matching  
7 certain patterns of bits, in terms of, like, content,  
8 things we've talked about today, that are not necessarily  
9 application letter -- layer header fields. They're just  
10 bits that occur at certain positions in the packet, hence 10:21:33  
11 there's a high likelihood for false positives.

12 Q. Are HTTP packets application layer packets?

13 A. I agree.

14 Q. In an HTTP packet, is the HTTP method in the  
15 packet header? 10:21:57

16 A. I -- I believe that in the context of the '343  
17 patent, that would be inclusive.

18 Q. And that would include HTTP methods, such as  
19 POST or GET?

20 A. I believe in the context of the '343 patent, 10:22:13  
21 that's correct, but then it has to be identified as a  
22 part of the header, not simply, you know, just the word  
23 "POST" occurring at a certain place in the packet.  
24 That's why I made my conclusion here in paragraph 88 the  
25 way I did. 10:22:33

1 Q. Did you analyze how many rules in Exhibit 1020  
2 trigger on an HTTP method being in the first several bits  
3 of a packet?

4 A. I didn't have time to do that. There was over  
5 11,000 rules, as we talked about today. I scanned them, 10:22:49  
6 but I didn't do counts like what you're suggesting.

7 Q. To assess the teachings of the prior art  
8 reference as a whole, did you investigate the rules in  
9 Exhibit 1020 to get a sense of what rule contributors  
10 were doing and what they knew in 2010? 10:23:07

11 A. Yes, I did.

12 Q. And what did that involve?

13 A. That was -- generally speaking, people were  
14 contributing rules that matched the -- that are a part of  
15 the Snort language that then would match potentially on 10:23:25  
16 different types of packets. But as I've mentioned, many  
17 of these rules are commented out and then would not have  
18 any functionality in actuality, and none of the rules are  
19 to drop any packets.

20 Q. And were there rules in Exhibit 1020 that would 10:23:51  
21 match packets that included an HTTP method, such as POST  
22 or GET?

23 A. I believe we looked at some today that would  
24 match such things, but then would also match anything  
25 that had that string POST space in the proper place, 10:24:08

1       hence the potential for false positives.

2           Q.   Let's bring back up Exhibit 1020, which is the  
3       Emerging Threats reference, and go to page 52.

4           MR. DONOVAN:   And, Jon, could you zoom in on the  
5       10th rule down?   It has SID 2003575.                               10:24:40

6           Do I have the wrong page?

7           MR. MATTHEWS:   You said page 52; correct?

8           MR. DONOVAN:   I believe so.

9           MR. MATTHEWS:   Just a moment.   Let's make sure.

10          MR. DONOVAN:   Yeah, it's SID 200 -- sorry.   It's           10:25:38  
11       2003575 and is on page 52.

12          Q.   Dr. Goodrich, do you see that?   And it's up on  
13       the screen as well.

14          A.   I see it.

15          Q.   And this is another rule that you didn't address       10:25:59  
16       in your declaration, but are you able to tell what this  
17       rule does?

18          A.   Let me see.

19                So first, it's going to look for a packet.   It's  
20       the TCP protocol.   The source address is in the list of       10:26:15  
21       home nets on any port.   Its destination address is in the  
22       external net list, and its port number is in the  
23       HTTP\_PORTS list.

24                And then it is, looks like, looking for a URI  
25       content that has the string /gs\_med, not worrying about       10:26:38

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1 the case, and then there's some other things there, but I  
2 think that's the most significant part of this rule.

3 Q. And it says -- and can you tell from reviewing  
4 this rule, or from your expertise generally, whether the  
5 URI in an HTTP packet is in the prefix or the packet 10:27:06  
6 header?

7 A. I am not recalling that, as I sit here today.  
8 This just looks like it's matching a URI that has in it  
9 the string /gs\_med.

10 Q. And do you see the message field here? 10:27:27

11 A. I do.

12 Q. That indicates malware spyware posting data;  
13 right?

14 A. That's what it says. But again, the message  
15 field is just a comment. It doesn't have any actual 10:27:39  
16 functionality.

17 Q. Does the message field indicate what the creator  
18 of the rule intended the rule to do?

19 A. Generally speaking, I believe that's what we  
20 should interpret msg messages to be, but their intent 10:27:53  
21 doesn't always necessarily match what -- how the rule  
22 actually functions, of course.

23 Q. And do you have -- I'm sorry. Do you have more  
24 to say?

25 A. I just said of course. 10:28:05

1 Q. And do you have an understanding of what malware  
2 spyware posting data would mean to one of skill in the  
3 art?

4 A. Just that, that it's malware, so it's malicious  
5 or potentially malicious software. In this case, 10:28:20  
6 included what the author would call spyware, that then is  
7 posting data.

8 Q. And it's posting data from a home net address to  
9 an external net address; right?

10 A. In this case, it's, as we talked about, a packet 10:28:38  
11 that would match as its source address in the home net  
12 list and its destination address in the external net  
13 list, so that depends also on context.

14 Q. And this rule would be triggered if a packet  
15 both met the 5-tuple requirements here, as well as 10:29:00  
16 contained the URI content /gs\_med; is that right?

17 A. That's right.

18 MR. DONOVAN: Jon, could you go to page 190 of  
19 Emerging Threats? And scroll to the one, two, three --  
20 the fourth rule down. It has SID 2009082. 10:29:26

21 Q. And, Dr. Goodrich, do you see this rule?

22 A. I do.

23 Q. And can you tell who contributed this rule?

24 A. The comment says it's by Paul Dokas, D-O-K-A-S.

25 Q. And would you understand that comments within 10:29:53

1 Emerging Threats as indicating who in the community  
2 submitted the different rules to Emerging Threats?

3 A. That's how I interpret that comment.

4 Q. The message in this rule says, "ET TROJAN

5 Password Stealer Reporting." 10:30:10

6 Do you see that?

7 A. Yes.

8 Q. Would you understand that to be the intention of  
9 this rule, to fire when there's a Trojan password stealer  
10 reporting? 10:30:23

11 A. I would take the -- there's more to it than just  
12 that. There's also some cryptic characters after that,  
13 so I'm not sure what those cryptic characters are  
14 referring to.

15 Q. For the rest of it, do you have an understanding 10:30:40  
16 of what password stealer reporting means?

17 A. That depends on context, but one context is that  
18 it's trying to steal passwords, just as it would say.

19 Q. And what packets would trigger this rule?

20 A. This one's a little more tricky, so first we 10:30:58  
21 have to have the character string POST space at the  
22 beginning. Depth 5. Not worrying about the case, and  
23 then there's URI content that includes A=%, &b=. Then  
24 there's a regular expression about matching content in  
25 the packet as well. 10:31:29

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1 Q. I'm sorry, where is the regular expression about  
2 matching content in the packet?

3 A. It's -- it's the next after that. It says,  
4 "pcrc:" And then there's a sequence of characters that  
5 is a regular expression. 10:31:48

6 Q. And this rule would also be triggered for  
7 packets that are leaving the home net on any port and  
8 destined for an external net on HTTP ports; right?

9 A. It would be a packet that -- whose, again,  
10 source address matches the home net list on any port and 10:32:09  
11 whose destination address matches external net on an H --  
12 and its port is listed in the HTTP ports list, and it's a  
13 TCP packet, so that depends on context of what those  
14 variables mean.

15 Q. Understood. 10:32:33

16 On the same page, let's go down two rules to  
17 rule 2010918.

18 Do you see that rule?

19 A. Yes.

20 Q. It's up on the screen as well. 10:32:48

21 And would you understand this rule to be  
22 submitted by a different member of the community?

23 A. I -- I don't know if it was a different member.  
24 This appears to now be submitted based on username.

25 Q. And this -- this username is different than the 10:33:06

1 identified submitter of the prior rule; right?

2 A. It's -- it's different, but it could be that  
3 same person. I don't know. But it now appears to be a  
4 user ID. I don't -- I can't imagine anybody having the  
5 name given to them at birth of jn1nj4.

10:33:23

6 Q. The message field in this rule says, "ET TROJAN  
7 Paymilon-A HTTP POST."

8 Do you see that?

9 A. I do.

10 Q. Do you have an understanding of what this rule  
11 was intended to do?

10:33:41

12 A. That would require more time and analysis.

13 Q. Do you have an understanding of what Trojan  
14 Paymilon-A HTTP POST would indicate?

15 A. No, not sitting here today. I'm not familiar  
16 with that.

10:33:55

17 Q. Can you explain what would cause this rule to be  
18 triggered?

19 A. This one is a little more complicated, so first  
20 there's a content that has to be a depth 12. We see  
21 character string POST space HTTP and then the binary for  
22 3a and //. Then anywhere in the packet there has to be  
23 content of C and then the binary 3a\\. There's -- also  
24 has to be content of a .exe followed by binary 00 00. So  
25 there's -- to really dig into this would require a little

10:34:10

10:34:53

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1 more time for me.

2 Q. Do you see at the start of the second line where  
3 it says, "distance:0"?

4 A. Yes.

5 Q. Do you have an understanding of what that means? 10:35:04

6 A. I'm not immediately recalling what the distance  
7 0 means in this.

8 Q. And that would be -- I'm sorry. Did you have  
9 more to say?

10 A. No. 10:35:11

11 Q. And that would be true for the next place where  
12 it says "distance:0" later in that line; right?

13 A. Correct.

14 MR. DONOVAN: Jon, let's go to page 191 of  
15 Exhibit 1020. And four rules up from the bottom there's 10:35:32  
16 a rule with SID 201066. Sorry. It's 2010066.

17 Q. Dr. Goodrich, do you see that rule?

18 A. I do.

19 Q. And this rule indicates that it was contributed  
20 by Jaime Blasco; is that right? 10:36:04

21 A. Yes, that's what it says.

22 Q. And the message field in this rule says, "TROJAN  
23 Data POST to an image file (gif)"?

24 A. Yes, I see that.

25 Q. Do you have an understanding of what this rule 10:36:19

1 would have been intended to do?

2 A. That would require more time and analysis.

3 Q. You can't understand from reading what -- the  
4 message what the purpose of this rule is?

5 A. The message just says what it says, what the -- 10:36:31  
6 again, this is a comment. "ET TROJAN Data POST to an  
7 image file (gif)."

8 That's strange language. That seems like  
9 strange language to me. Sorry.

10 Q. As an expert in computer security, you don't 10:36:50  
11 have an understanding of what this was intended to  
12 communicate the rule was intended to do?

13 A. That would require more time, because it's using  
14 strange language here, "POST to an image file."

15 Q. Are you able to, reviewing this rule now, tell 10:37:07  
16 me what would cause this rule to be triggered?

17 A. I can try. This is a pretty complicated rule.

18 So first it has to match POST space string at  
19 depth 5. It has to have a URI content that includes the  
20 string .gif. And no worry about the case. It also has 10:37:33  
21 to have content somewhere in it that says, ".gif HTTP,"  
22 no worrying about the case. And then it has to match a  
23 fairly complicated looking regular expression as well  
24 with respect to this pcre field.

25 Q. And this would also be triggered only on packets 10:38:05

1       TCPP -- TCP packets sent from the home net IPs, any port,  
2       to an external net IP on HTTP ports; is that correct?

3           A. It would match any packet whose source address  
4       is included in the home net list on any port and whose  
5       destination address is included in the external net list       10:38:31  
6       and whose port is included in the HTTP ports list, so  
7       that would depend on context, as would all of these rules  
8       that include these variable names \$HOME-NET,  
9       \$EXTERNAL\_NET and/or \$HTTP\_PORTS.

10          Q. And do you have an understanding of what IPs       10:38:58  
11       would be on the home net list?

12          A. That depends on context. That is set by the  
13       administrator of the system that then this rule would  
14       allegedly be put into.

15          Q. Do you know the intention of the home net list?       10:39:15

16          A. That also depends on the intention of the  
17       administrator, so that depends also on context.

18          Q. Would your answer be the same for external net?

19          A. Yes.

20          Q. Okay. Dr. Goodrich, I have no more questions       10:39:31  
21       today. Thank you.

22          A. Thank you.

23               THE REPORTER: Any questions, Counsel?

24               MR. PRICE: Let's just take ten minutes.

25               MR. DONOVAN: Okay.       10:39:42

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(Recess.)

THE REPORTER: Back on the record at 10:48 a.m.

MR. PRICE: We have no redirect today.

THE REPORTER: Thank you, Counsel.

Off the record at 10:48.

10:48:24

(Time Noted: 10:48 a.m.)

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I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on \_\_\_\_\_, 2024, at \_\_\_\_\_.

1 STATE OF CALIFORNIA ) ss:  
2 COUNTY OF MARIN )  
3

4 I, LESLIE ROCKWOOD ROSAS, RPR, CSR NO. 3462, do  
5 hereby certify:

6 That the foregoing deposition testimony was  
7 taken before me at the time and place therein set forth  
8 and at which time the witness was administered the oath;

9 That testimony of the witness and all objections  
10 made by counsel at the time of the examination were  
11 recorded stenographically by me, and were thereafter  
12 transcribed under my direction and supervision, and that  
13 the foregoing pages contain a full, true and accurate  
14 record of all proceedings and testimony to the best of my  
15 skill and ability.

16 I further certify that I am neither counsel for  
17 any party to said action, nor am I related to any party  
18 to said action, nor am I in any way interested in the  
19 outcome thereof.

20 IN WITNESS WHEREOF, I have subscribed my name  
21 this 17th day of January, 2024.  
22

23   
24

25 LESLIE ROCKWOOD ROSAS, RPR, CSR NO. 3462

JEFFREY H. PRICE, ESQ.

jprice@kramerlevin.com

January 17, 2024

RE: KEYSIGHT TECHNOLOGIES, INC. vs. CENTRIPETAL NETWORKS, LLC

January 5, 2024, MICHAEL GOODRICH, PH.D., JOB NO. 6393105

The above-referenced transcript has been

completed by Veritext Legal Solutions and

review of the transcript is being handled as follows:

\_\_\_ Per CA State Code (CCP 2025.520 (a)-(e)) - Contact Veritext to schedule a time to review the original transcript at a Veritext office.

\_\_\_ Per CA State Code (CCP 2025.520 (a)-(e)) - Locked .PDF Transcript - The witness should review the transcript and make any necessary corrections on the errata pages included below, notating the page and line number of the corrections. The witness should then sign and date the errata and penalty of perjury pages and return the completed pages to all appearing counsel within the period of time determined at the deposition or provided by the Code of Civil Procedure.

\_\_\_ Waiving the CA Code of Civil Procedure per Stipulation of Counsel - Original transcript to be released for signature as determined at the deposition.

\_\_\_ Signature Waived - Reading & Signature was waived at the time of the deposition.

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1     \_\_\_ Federal R&S Requested (FRCP 30(e)(1)(B)) - Locked .PDF  
2     Transcript - The witness should review the transcript and  
3     make any necessary corrections on the errata pages included  
4     below, notating the page and line number of the corrections.  
5     The witness should then sign and date the errata and penalty  
6     of perjury pages and return the completed pages to all  
7     appearing counsel within the period of time determined at  
8     the deposition or provided by the Federal Rules.  
9     \_X\_ Federal R&S Not Requested - Reading & Signature was not  
10    requested before the completion of the deposition.

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CASE: KEYSIGHT TECHNOLOGIES, INC. vs. CENTRIPETAL NETWORKS, LLC  
WITNESS: MICHAEL GOODRICH, PH.D. (#JOB NO 6393105)

E R R A T A S H E E T

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[2003934 - 9001]

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[97 - application]

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[exhibit - foundation]

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[patent - pound]

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[pound - recalling]

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**[recalling - right]**

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[right - says]

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[says - sigs]

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[similar - ssl]

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[using - york]

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

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