UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KEYSIGHT TECHNOLOGIES, INC.

Petitioner,

v.

CENTRIPETAL NETWORKS, LLC,

Patent Owner.

Case IPR2023-00445

U.S. Patent No. 10,785,266

and

Case IPR2023-00448

Patent No. 11,012,474

ZOOM DEPOSITION OF DR. DOUGLAS JACOBSON, TAKEN BEFORE CHRISTINE SALERNO, REGISTERED PROFESSIONAL REPORTER, GENERAL NOTARY PUBLIC WITHIN AND FOR THE STATE OF NEBRASKA, BEGINNING AT 9:34 A.M., CENTRAL STANDARD TIME, ON THE 2ND DAY OF OCTOBER, 2023, VIA ZOOM.

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E X H I B I T S

EXHIBIT DESCRIPTION PAGE

PREVIOUS EXHIBIT 1001-266:'266 PATENT .....12
PREVIOUS EXHIBIT 1001-474:'474 PATENT .....12
PREVIOUS EXHIBIT 1003-266:'266 JACOBSON DECLARATION .....6
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(Whereupon, the following proceedings were had, to-wit:)

(All parties to this deposition are appearing remotely and have agreed to the witness being sworn remotely.)

DR. DOUGLAS JACOBSON,
having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. FULLER:

Q. Good morning, Dr. Jacobson. Can you please state your full name for the record?

A. Yeah, Douglas Wade Jacobson.

Q. And then do you understand why you're here today, Dr. Jacobson?

A. Yeah, deposition on a couple of patents.

Q. So the depositions today are in regard to IPR 2023-00445, which challenges patent -- U.S. patent 10,785,266. Is that okay if we refer it that patent as the '266 patent?

A. Yes.

Q. And we referred to this IPR as the '266 IPR?

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A. Yes.

Q. Right. And then the second IPR is IPR 2023-00448 challenging U.S. Patent 11,012,474. Is that okay if we refer to that patent as the '474 patent?

A. Yep.

Q. And then that IPR is the '474 IPR?

A. Yes, that works.

Q. Perfect.

Is there any reason that you cannot give your truthful testimony today?

A. Nope.

Q. Great. Dr. Jacobson, I just want to get some formalities out of the way to make sure that this runs smoothly.

For your exhibits today, do you have paper copies or I can upload?

A. I have paper copies, clean copies of my two declarations, and clean copies of the '474 and '266 patents, and also clean copies of the Law, Johnson Jung (sic), the -- the patents and the one paper that go along with the declarations. I don't have any other exhibits.

Q. Okay. Well, it's all right with me, we can just use your clean copies for today and if I have any other exhibits that you didn't mention, I will just upload into the chat message; is that okay?

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A. Yep, that's works.

Q. All right.

So can you open up your marked Exhibit 1003, in the '266 and '474 IPRs, or just have them available.

(Exhibit Nos. 1003-266 and 1003-474, previously marked in prior deposition.)

A. Yeah 166, yep -- or the '266, sorry.

Q. Yeah, there's a lot of numbers going on.

A. Yep.

Q. All right.

MR. DETRIXHE: You marked as Exhibit 1 -- what did you mark as Exhibit 1, Jenna?

MS. FULLER: It should be 1003. They should be already marked as Exhibits 1003 --

COURT REPORTER: So you're marking them here today in this transcript?

MS. FULLER: No, what I mean, they should already be marked.

MR. DETRIXHE: Oh.

MS. FULLER: They're already filed.

MR. DETRIXHE: Dr. Jacobson's declaration and...

MS. FULLER: Yes.

MR. DETRIXHE: Gotcha.

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MS. FULLER: Sorry.

MR. DETRIXHE: Sorry for interrupting. I understand now. Thank you.

MS. FULLER: We're throwing around a lot of numbers this morning.

BY MS. FULLER:

Q. All right. Dr. Jacobson, do you have those in front of you?

A. Yes, I have 1003 in front of me, yep.

Q. Okay. Do those declarations include all your opinions you have formed for these two cases?

A. Declaration, yeah, outlines my opinions, correct.

Q. Are there any corrections to those declarations that you would like to make at this time?

A. We're talking about the '266 -- are we talking about both of them right now?

Q. We can -- let's just step through it. So we'll talk about the '266 declaration. Is there any correction that you would like to make to that one?

A. Yeah, there's a typo in -- okay, Roman numeral VIII, where it says, "Law In View Of Wood Renders Obvious Claims 1 through 24," that's a typo. That should actually include all of the Claims 1 through 27. So that's a typo in the table of contents

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and correspondingly on the page itself.
Q. Is that the only correction for the '266 declaration?
A. Tha -- to my knowledge that's the only thing that I've seen since the declaration got filed.
Q. Okay. Now turning to the '474 declaration, are there any corrections that you would like to make at this time concerning that declaration?
A. I don't have any that I've seen.
Q. Can you describe the process of writing your '474 and 26 (sic) declarations?
A. Yeah, been a long time ago. Various, you know, phone calls, Zoom calls with counsel and discussions, then that led to drafts of the declarations being exchanged via e-mail and also discussed over -- over Zoom calls and that -- which lead to the final -- final copies.
Q. How many hours would you say you spent preparing each of the declarations?
A. I can't give you an exact number. It's been six months ago maybe, you know, in the -- you know, probably over 10, maybe close to over 20 hours for each one, if I were to guess. I don't -- I don't have a -- I don't have any of my billing records.
Q. So generally 10 to 20 hours for each

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declaration, that that's a --
A. Yeah, that probably doesn't count some of the phone time with counsel, et cetera.
Q. Did you review any of the exhibits filed in this case?
A. Yeah, I've looked through all the exhibits. My memory right now can't tell you what all exhibits had but, yes, I looked through exhibits.
Q. Did you review any of those exhibits in preparation for your deposition today?
A. For today I, of course, reviewed the two patents themselves, as I mentioned the things that I have printed out, the various supporting patents, the article by Golnabi.
I also read through Centripetal's response and also read through the board or whatever the -- whatever the group that responds back on both -- on the arguments.
Q. I think you're referring to the institution decision by the board, correct?
A. There you go, yes.
Q. So how many hours would you roughly say that you spent preparing for your deposition today?
A. Oh, probably over the last coup -- few weeks maybe, you know, 10-plus hours.

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Q. Did you meet with attorneys during those hours?
A. I had Zoom conversations with -- you know, with counsel.
Q. So, Dr. Jacobson, what is your understanding of the term "person of ordinary skill in the art"?
A. My understanding is that it's just as the name implies. It is a individual who at that time would have understood how -- how the patent -- you know, what was -- what was obvious of how things worked at that time. So it would have been -- and I can't remember exactly how we de -- how it was defined in the declaration. I can look that up but, you know, simple terms, it's just as the name implies. Somebody who's -- I think we said somebody with a background in computer science, computer engineering and networking.
Q. And then how did you go about determining that person of ordinary skill at the time of the claimed inventions? What was your process?
A. Well, just again, applying what -- the exact criteria to -- to an individual and so, you know, having, you know, been in this field for 35 years, that, you know. And teaching -- teaching people to be skilled in the art, that's, you know, it was pretty straightforward to understand what that -- what that

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meant.
Q. Did I hear 35 years in computer science; is that correct?
A. Actually if you go back farther than that -- that's how many years I've been teaching but I -- my field of study in networking started in about 1980.
Q. Wow.
A. So however many years that is, a long time.
Q. Yes, well, congratulations. That's -- I'm five years and I'm like where's retirement coming.
A. Yeah.
Q. So give me a little background track, Dr. Jacobson. What is your understanding of claim construction in this IPR process?
A. That, you know, sides agree on how the cla -- you know, certain wording in the claims apply and so if there's anything that's contested, then that gets worked out. So it's really, you know, things that aren't -- yeah, aren't agreed upon otherwise we -- you know, both sides agree on how the terms in the claims are interpreted.
Q. Did you -- for the '266 IPR, did you interpret any claim terms?
A. I would have to look to see exactly if I -- if I interpreted any claim terms. I don't -- I don't

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recall exactly if there were any terms that needed to be interpreted.
Q. So that there weren't any terms that needed to be interpreted, did you apply then just the plain and ordinary meaning to those terms?
A. I would have to look to see exactly if there were any, but if the -- I would apply normal meaning to any of the terms that -- that were not in contention.
Q. And for the '474 IPR declaration, was that the same process that you went through as well?
A. Yeah.
Q. And, Dr. Jacobson, feel free to let me know if you do want to skim through your declaration and take a look.
A. Okay.
Q. By all means --
A. Yep.
Q. -- you know, take that time.
Dr. Jacobson, can you just have in front of you as well the '266 and '474 patents that have already been marked in this proceeding as Exhibits 1001?
(Exhibit Nos. 1001-266 and 1001-474, previously marked in prior deposition.)
A. Yes, as soon as I find them on my cluttered desk. That's the bad thing about paper, right, it

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takes up space.
Yes, I have them both.
Q. Great.
So, Dr. Jacobson, when preparing your '266 declaration, did you come to an understanding of what was meant by the claim term, which is in the '266 patent, "receiving by the packet security gateway and from a security policy management server external from the network protected by the packet security gateway, a dynamic security policy comprising a first set of packet filtering rules"?
A. And where are you at in the --
Q. I am in -- oh, pardon me, Dr. Jacobson. I am in Claim 1 of the '266 patent. You can also find it in Paragraph 67 of your '266 declaration.
A. Okay, I'm -- yep, found 'em -- found it.
Sorry, now what?
Q. Would you like me to repeat my question?
A. Yes, please.
Q. All right. When preparing your '266 declaration, did you come to an understanding of what was meant by the claim term, "receiving by the packet security gateway and from a security policy management server, external from the network protected by the packet security gateway a dynamic security policy

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comprising of first set of packet filtering rules"?
A. Yes.
Q. And what was that understanding, Dr. Jacobson?
A. Yeah, it -- as it says, the packet security gateway has, so external from it which implies that it would be across the internet, a server which they refer to as policy management server, and that server provides rules to the packet security gateways and those rules apply to all of those gateways and these are the gateways as it states are protecting traffic traversing a boundary.
So that's -- so you have boundary, security gateways, and then outside the protected space, outside the boundary, you have a management server.
Q. And when you say "rules," does that include the dynamic security policy in the rules that are included in the dynamic security policy provided to the packet security gateway?
A. Yeah, it's -- yeah. So, yeah, that's part of the rules, so...
Q. So, okay. So --
A. Yes.
Q. -- just for a correct understanding, the PSG receives from the SPMS a dynamic security policy

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including rules?
MR. DETRIXHE: Objection, form.
A. So it receives dynamic security policy which is comprised of filtering rules and then those filtering rules are applied to all of the PSGs.
BY MS. FULLER:
Q. And the rules are applied to then all network traffic that is traversing the boundary; is that correct?
A. Yeah, the PSGs apply the rules to the traffic traversing the boundaries.
Q. Is it a correct understanding that traversing the boundary is going from outside to inside the -- strike that.
What -- Dr. Jacobson. what does traversing the boundary mean to you?
A. Packets that -- that if we define the boundaries being something -- two networks that the packet security gateway is between, then packets that go across the packet security gateway are traversing that boundary.
Q. In and out packets that are going from the inside out to the outside and from the outside to the inside?
A. Traversing doesn't apply a direction, so --

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so, yeah, I -- traversing means that the packets are flowing in either direction.
Q. Dr. Jacobson, can you turn to Paragraph 64 of your '266 declaration. Let me know when you get there. And I apologize ahead of time. We'll be doing some bouncing around.
A. Well, that's to be expected.
Q. Given the two IPRs, we'll be --
A. I'm still in the '266, right?
Q. Yes.
A. Okay. And which -- or 64, yes.
Q. Correct.
A. Yes.
Q. Specifically can I direct your attention to where you state, "To the extent that the preamble is construed to require that a plurality of packet security gateways collectively protect a single network."
Do you see that sentence?
A. Yes.
Q. Is it your opinion that if a plurality of network packet security gateway -- or, pardon me. Is it your opinion that a plurality of packet security gateways collectively protect a single network?
MR. DETRIXHE: Objection, form.

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A. Well, pre -- yeah, preamble says that there's a multiple, a plurality of packet security gateways that protect a single network.
BY MS. FULLER:
Q. So your understanding of the preamble based on the claim language is that a plurality of packet security gateways collectively protect one network; is that correct?
A. Yes, a single network, yes.
Q. Can I direct your attention now to the '474 declaration, in the '474 patent. And I'll let you get there.
A. Clearly needed to be more organized. Let's see...
Q. It's more on me. I apologize for jumping around.
A. No, no, I need a desk about the size of a pool table. I don't -- so...
All right. So '474 patent and declaration, got 'em.
Q. Yes.
In Claim 1 of the '474 patent, the claim states, "an indication of a feed managed by at least one of the plurality of malicious host tracker services."

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Do you see that claim language?
A. Hang on, let me get to that. Which claim is that?
Q. I believe it's going to be in Claim 1?
A. Okay. Claim 1's a big claim, but, yeah, okay.
Q. Do you see that language? Sorry --
A. Help me get quickly -- sorry.
Q. Yes, line 55 of Column 25?
A. All right, thank you. There we go, yes.
Q. What is your understanding of this claim term?
MR. DETRIXHE: Objection, form.
A. So my understanding is that there are more than one what's referred to a malicious host tracker services so that -- services that provide information about hosts or, you know, things that can be -- be threats, mollitious. And that -- together that is a -- well, more of them, one or more of them, that is fed so, they're talking about a feed being fed to the packet security gateway, so you're talking about one or more groups or services that provide information to the packet security gateway.
BY MS. FULLER:
Q. And does each service or group, they have an

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indication of a feed, is that -- is that a correct assessment?
MR. DETRIXHE: Objection, form.
A. Yeah, so it's an indication of a feed managed by at least one of the mollitious host tracking services.
BY MS. FULLER:
Q. And did you come to an understanding of what an indication of a feed is?
A. Yeah, it would be a indication of, you know, usually talk about -- but information from, you know, where the feed came from, information potentially about the feed source, so when it -- yeah, so when it talks about indication of a feed managed by, so that indicates that some level of attribution to the -- to the source of the feed.
Q. So does an indication of a feed indicate the source itself?
A. The source of?
Q. Of the feed.
A. Oh, source of the feed. Yes, it would indicate who -- who provided -- what service provided the feed.
Q. Can I direct your attention to Paragraph 86 of your '474 declaration. Let me know when you get

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there, Dr. Jacobson.
A. 86 you said?
Q. Yes.
A. Got there.
Q. So in Paragraph 86 you state, "Law describes rules with widely varying attributes. In particular, Law explains that protocol types of the example protocol type Column 1302 may include, but are not limited to, UDP, TCP, HART and/or SCPI. A POSITA would have understood that any Law's feeds of threat data 310 from sources 315 may have been uniquely associated with a particular combination of rule parameters. For example, one feed may have a special -- may have specialized in the SCPI protocol."
Do you see that passage?
A. Yep.
Q. Dr. Jacobson, is it your opinion that the threat data 310 includes rules having these types of rule parameters that are associated with the sources?
A. Yeah, I mean, he -- Law outlines that these are examples of what would be in the 310 feed, so various attributes would be in that -- in that feed.
Q. So the threat data 310 would include rules with these types of attributes?
A. I'm sorry, I didn't quite -- I didn't catch

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the very beginning of your...
Q. I'll restate that.
So the threat data 310 includes rules with these types of attributes; is that a correct assessment?
MR. DETRIXHE: Objection, form.
A. He's giving some examples of what would be in that -- in those 310 feeds, so it is not -- is not meant to be a limiting, just these are the only things.
BY MS. FULLER:
Q. So some of those examples are the UDP, TCP ICMP, HATT, et cetera, correct?
A. Yeah, those are -- those are, but not limited to, but those are examples.
Q. And are these attributes part of -- of rules?
A. These attributes would be part of what's fed down to in what Law refers to as firewalls, and so they would be part of the what would be commonly referred to as a rule.
Q. Dr. Jacobson, will you turn to Paragraph 79 of your '474 declaration. Let me know when you get there.
A. 79, yep.
Q. I'm going to get there myself.
A. Oh.

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Q. Give me a second, you beat me.
A. Paper's faster.
Q. I'm a fan of the Control F where you can just like search for something.
A. Oh.
Q. I'm kind of amazed that you're still doing paper.
A. Remember I'm the old person.
Q. 35 years.
All right, so in this -- in this paragraph, Dr. Jacobson, you state that, one, "it would have been obvious to a POSITA that there would have been a high likelihood of duplicates in the received debt data 310."
Do you see that statement?
Yes.
Q. What is -- what is your -- can we -- what does it mean to have a high likelihood of duplicates in the received threat data 310?
A. Well, when you're talking about having what he refers to as the -- his sources are called, are the 315s, so I think he has, what, six circles. But, you know, that could be -- some number of these 3 -- 315s that are independently collecting threat data, IP add -- whatever, you know, whatever their particular

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specialty is.
But if it's -- if it's truly a thread on the internet, if something's been identified as a threat, one would hope that multiple threat services would come up with the same answer. And so, therefore, these independent services are going to be -- have a high likelihood of coming up with the same bad actors, and so that -- that means that three '05 would end up with, you know, the same answer for multiple 315s.
Q. And high likelihood of duplicates in the received threat data 310, is that referring to a high likelihood of duplicate rules?
A. Yeah, it's high like -- you know, each of the 315s are -- are providing threat data in the form of rules and so, yes, there would be a high likelihood that that -- they would identify the same threat and, therefore, it would be the same rule.
Q. So then can I direct your attention then, Dr. Jacobson, to the same paragraph where it says, "it would have been obvious to a POSITA to analyze the received threat data 310 to remove the duplicate rules."
Do you see that?
A. Yep. Yep.
Q. So is it your understanding that a POSITA

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would have analyzed the threat data to find and remove the duplicate rules because there's a high likelihood of duplicates in the received threat data?

A. That would be one reason to analyze -- yeah, to remove -- let me see, I'm sorry, restate the question. I -- there was a couple parts. Let me try -- redo it.

Q. Yeah. Thank goodness I have real time, so...

So is it your understanding that a POSITA would have analyzed the threat data to find and remove the duplicate rules because there's a high likelihood of duplicates in the received threat data?

A. That would be a reason to, yes, to process the rules and remove -- yeah, 'cause there are going to be duplicates, so the 305 needs to -- needs to process the rules.

Q. And then these duplicate rules could include attributes or features such as UDP, SCPI, TCP, ICMP protocols; is that correct?

A. They could -- that would be a set, they could have other data associated with 'em, data indicating where they came from, and so, you know, it makes -- so, yeah, again, Law only gave some examples.

Q. What is your understanding of a SCPI protocol?

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MR. DETRIXHE: Objection, form.

A. I would have to go back and -- it's a -- one of several -- so I would have to go do some research on it, but it's a -- my understanding is it's a process control type of -- of protocol. I would have to look exactly what it stood for.

Q. When you say process control type of protocol, what do you mean by that?

A. It would be just like today we talk about the web, that's a protocol; we talk about e-mail, that's a protocol; so there are protocols that help devices talk to each other, you know, with -- so in -- so process control protocol may be something for a computer, general purpose computer, to communicate with a device on the factory floor, you know, a middle of thing machine, a lathe, whatever, you know.

Again, I don't know exactly what devices that protocol lets us talk to, but generally process control protocols let IT type computers talk to, you know, manufacturing and other types of devices.

Q. And you say a process control, is that referring to a process control system?

A. Yeah, so one of Law's embodiment, one of, you know, he discusses having general computing devices in his network and he also talks about having process control devices in his network.

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Q. And what is your understanding of process control systems?

A. Extremely, extremely broad term. And we -- in simplest terms, when we think of process control systems, these are systems that manage something on the physical side, so pumps, lathes, you know, a myriad of things, but so it provides that connectivity between the IT side to the physical side.

Q. So if we're referencing Law's process control systems, what is the Law referring to when it states process control systems? Are they high risk applications --

MR. DETRIXHE: Objection, form.

Q. -- such as nuclear power plants, chemical plants?

A. Law mentions those as a -- one possible type of systems. It also refers to what you would consider less -- less dangerous types of systems. He also refers to IT systems. So, yeah. And, you know, when you talk about process control, it can be everything from -- well, a vending machine is process control, to a nuclear power plant, so...

Q. Can we -- now that we're on the subject of Law, let's bring up Law's document which is marked

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already as Exhibit 1005 in the '266 and '474 IPRs.

(Exhibit No. 1005 previously marked in prior deposition.)

Q. Dr. Jacobson, let me know when you have that in front of you.

A. Yep, that's the only one that's in a notebook so I can find a notebook.

Q. So, Dr. Jacobson, roughly how much time did you spend reviewing Law in your process of writing the declarations and preparing for the deposition today?

A. Boy, I can't -- you know, I can't give you an exact answer but probably at least, you know, in the order of 10 hours give or take some.

Q. And, Dr. Jacobson, what is your understanding of Law's contribution to the art. Do you come to an understanding?

MR. DETRIXHE: Objection, form.

A. Well, I mean, yeah, so he starts out by his whole thing is referred to as a unified threat management system so that's his entire -- what he labels 100. And so Law proceeds to discuss how this system can protect or -- and uses the word securing network traffic, and what is protecting from, or not from but what it's protecting is a system made up of, you know, IT type -- classical IT type devices and

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devices that are part of a -- a process control.
Law goes on to, you know, talk about the fact that there's a unified -- or there's a what he calls 305 that is providing the information to his firewalls that are protecting his -- what -- you know, what he intends to protect, and so we have a set of rules, threat indicator, a set of rules that come from the 315s, they feed into 305. 305 will distribute those rules down to his firewalls in which case his perimeter firewalls, 146A and B, and those are designed of course to protect everything on the inside of -- of -- so that's the -- that's the border.
And then inside is environment, he goes into a lot of, you know, a lot of detail, a lot of which, you know, Law -- Law has a lot of pieces to it, so he talks about IT devices, he talks about mobile devices, he talks about process control devices, and so his 140, his firewalls protect all of those things at that border crossing coming from, again, multiple sources, one source and then protecting whatever he has on the inside.
BY MS. FULLER:
Q. And it's protecting a process control system, that's the inside?
A. The inside --

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MR. DETRIXHE: Objection, form.
A. He's -- he uses that as a -- yeah, as an example, as primary motivation but he talks again about regular computer devices which would have, you know, the standard vulnerabilities that a computer device would have, and so it's really computing devices and the added complexity of trying to protect a process control.
So it's in some sense the -- protective of what normal peo -- what you normally protect, and I also have a system that can further protect my process control system.
BY MS. FULLER:
Q. Which process control system. as we discussed. can be anywhere from a nuclear power plant, chemical plant to -- I'm forgetting the third one, but it's --
A. Yeah, yeah, it can be, right, you know, a small factory with three computer control lathes, that's a pro -- that's a process control system.
Q. What is your understanding of the -- Law's UTMS acronym, like unified threat management system?
MR. DETRIXHE: Objection, form.
A. So it is a -- well, it's basically describing -- it is a -- what he calls -- that's just

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the acronym he's given to protect what's on the in -- what's on the inside. And so it, as the name implies, it manages the threats, so again threats come from service provide -- from providers, aggregated in -- in 305 and then that -- those rules are then fed into his firewalls which is then the part that helps protect the internal network so that is the UTMS -- it's that whole -- well, yeah.
BY MS. FULLER:
Q. So does the UTMS system have operator workstations that operators are involved with configuring and managing security of the process control system?
A. Yeah, it has -- it -- it identifies one of the components as an operator management systems, and so operators at these systems their primary role is to manage the process control itself and so, yeah.
Q. And when we refer to, "manage the process control system itself," does that mean that they're managing the security of the -- of the process control system?
MR. DETRIXHE: Objection, form.
A. Typically an operator's role in a process control system. If you take a factory floor for example, the operator's role is to manage the operation

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of the factory, to make sure that -- that the widgets get produced. Make sure that the raw materials come in to the factory and that they -- they flow appropriately through the -- through the process, and so that's the typical process control.
To the extent that that -- that Law talks about giving the operators the ability to manage some of the security functionality is something that they don't have to do but that's a -- that is something that he specifies that -- that can be given to the operators to manually. But he -- you know, his big thing is that this is -- this is an automated system but with any automated system the human always has some sort of fail safe in there.
BY MS. FULLER:
Q. And where does Law specifically say that operators don't have to manage the system? Can you point me to a specific passage?
MR. DETRIXHE: Objection, form.
A. What I said -- operators manage the factory, the process control system. That's what operators do is they manage a process control system. So I think that's what I stated that they manage, you know, like I said how many widgets are produced, how the raw materials managing do -- you know, so the management of



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a factory floor, for example, is very complicated process.
BY MS. FULLER:
Q. So where you state that Law talks about giving the operator's ability to manage some of the security functionality is something that they don't have to do, can you point me to the specific passages where Law specifically says that they don't -- it's something that they don't have to manage the security function?
MR. DETRIXHE: Objection, form.
A. You would have to give me a few minutes here so I need to Control F.
So Paragraph 59, first sentence, "the smart -- smart devices may be configured to perform any network security functions without direct intervention by system operators or other personnel."
Q. So this is an understanding that the devices themselves in the UTMS system do not have to have -- are not configured by any network security functions?
MR. DETRIXHE: Objection, form.
BY MS. FULLER:
Q. Or let me -- let me rephrase that.
So these smart devices in the protocol system do not need to be configured by network security

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personnel?
MR. DETRIXHE: Objection, form.
A. So they're configured to perform network security functions without direct intervention. So this is discussing as the system is running, the operator's IT personnel do not need to do anything.
Q. Can I direct your attention to where it says in Paragraph 59, "the UTMS-configuring network access devices -- may also interface with the process control system 100 as a process variable that is able to be completely monitored and configured from a graphic display of an operator workstation, without IT personal intervention."
Do you see that?
A. Yeah.
Q. What is your understanding of that passage?
A. Again, it talks about the -- that one he -- he is talking about the operators having the ability to do things, so without -- and he talks about operators versus IT people. So he's talking about that the -- may interface with the process control system and then have a graphical display for the operator without having an I -- quote, IT person on the -- on the factory floor.
Q. So what is the distinction between an

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operator and an IT personnel in Law?
A. In Law, he -- so the operator's primary role and responsibility is -- again, I keep coming back to factory, that's just the easiest thing for us to talk about. They're the ones that make the factory work. Their job is to produce the widgets. The IT people do what IT people do, they run all the computing resource, they manage all of the computing side of the organization and your operator typically is an expert in producing widgets, not an expert in TCP/IP, et cetera. So it's very common for a factory to have that distinction and duties.
Q. All right. We're going about one hour on record. I know time flies, right? Want to take a 10-minute break?
A. It's up to you.
(Discussion off the record.)
(At 10:27 a.m. - Recess was taken.)

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(At 10:37 a.m., with all parties present as before, the following proceedings were had, to-wit:)
BY MS. FULLER:
Q. Dr. Jacobson, can I direct your attention to Paragraph 49 of your '474 declaration. Let me know when you get there.
A. Which paragraph?
Q. 49.
A. 49, okay.
Yep, I'm here, there.
Q. So in this paragraph you state that the "cyber security risk management firm 305 is a perpetual service that proactively supplies the UTMS-configured firewalls with updated rulesets to meet the latest security threats, threat patterns, and control system vulnerabilities found to exist within the network."
Do you see that?
A. Yes.
Q. So it's your understanding that cyber risk management firm 305 is a service that correctively provides the UTMS-configured devises with updated rulesets; is that correct?
A. Yes.
Q. Where does your understanding of cyber risk management firm 305 come from?



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MR. DETRIXHE: Objection, form.
A. I would have to go back in the exact paragraphs in Law. Law discusses 305 in a couple places, in particular reference to Figure 3, so I could -- you want me to try to find those in Law?
BY MS. FULLER:
Q. Oh, so your understanding comes from Law, specifically Figure 3?
A. Well, Figure 3 is and his discussion around Figure 3, so Figure 3 is a -- a good visual of showing firm 305, and its better action with the 315s.
Q. When you say in Paragraph 49 is a perpetual service, what is your understanding of a "perpetual service"?
MR. DETRIXHE: Objection, form.
A. My understanding is that that is -- perpetual means it's always there and so it is something that's available 24/7 to provide that information.
BY MS. FULLER:
Q. And what is involved in providing or carrying out that service by firm 305?
MR. DETRIXHE: Objection, form.
A. Can you clarify that a little more? Pretty broad.

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BY MS. FULLER:
Q. What -- when carrying out that service, like what infrastructure, IT personnel components are involved in firm 305?
MR. DETRIXHE: Objection, form.
A. I can give you my opinion of what -- what I think a 305 would look like. Law just identifies it as a 305, but it would be -- it would obviously have an IT infrastructure, 'cause it would need to receive data, receive rules and other -- other information from the 315s. So it would have to have a place to store that information.
It would need then necessary processing power to work with the various -- the information that it got from the 315s in order to process the rules and put them in a -- you know, duplications and et cetera as it needs to do, putting it in a format that can be ingested by the system in Law, so it's going to have to be the, in essence, the post process -- well, the processing in order to go out to be ingested. It will need storage for that.
Staff, you know, is what he can say but you're going to need obviously the staff to make sure that the computers all through that -- you know, that the computers are running and they're up to date so you

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have a staff infrastructure -- you have a staff to manage the infrastructure, typically these firms will also have staff that understand, you know, something about the 315s and understand, you know, issues about threats, et cetera. And so you're going to have some security type personnel in the 305 and then, of course, that's all. You know, I mean, I'm going to completely ignore everybody else that you need to run a business, but from a computing standpoint, that's at least off the top of my head what I would put into a 305.
BY MS. FULLER:
Q. Can we turn to Paragraph 94 of Law. And let me know when you get there. I'll turn to that as well.
A. All right, I'm there.
Q. Do you see where it describes a network access device in that paragraph?
A. At the very beginning, yes.
Q. What is your stand -- understanding of Law's network access device 149?
A. Somewhat generic about -- it's a device that defines -- that serves possibly several different functions, and he has several -- some figures and numbers that kind of talk a little bit about that.
But it's a device that can be used to -- you know, talks about bypass functionality, it talks about

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inter connectivity functionality like is shown in Figure 3.
So this is a device that allows us to interconnect in somewhat of a programic -- programmable way the physical networks.
So -- and so he's pretty -- you know, he gives lots of different characteristics that are -- can be applied to different use cases.
Q. So when you say it is a device that allows to interconnect in a programmable way the physical network, can you further elaborate on that?
A. Yeah, I mean, the Law talks about these being a configurable device and he shows them placed, you know, as you can see in Figure 3, there's a wire on each side and so he talks about, you know, having network connections, you know, the network access device has, like I said, in Figure 3 has two connections in it, for example.
And then depending on what it's going to do, like I said, it may -- he talks about, for example, it may run in a bypass mode which you sometimes do if you need to do some system updates, it -- occasionally there's times in which you want to -- especially internally, want to disable some of the segmentation so that you can push an update. So he talks -- he

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gives -- like I said, he's identified several characteristics, but it's a -- in its simplest form, it's a device with two network interfaces that connects, again, the two networks. I think he has a picture where he may have one that has three networks on it. I would have to go into more detail.

Q. So Figure -- let's reference Figure 5 for example of Law.

A. 5, hang on.

Q. It's on Page 6 of --

A. Yep.

Q. -- the Law document.

A. Yep.

Q. So are you there, Dr. Jacobson?

A. Figure 5, yes.

Q. So can you explain how this interconnection works between control system 105B and control system 105A?

MR. DETRIXHE: Objection, outside the scope of Dr. Jacobson's declarations.

A. I'll try to answer.

So -- and, again, I'm at Figure 5 and also Figure 5's a picture out of Figure 3, subset out of Figure 3. And so that is, in my opinion, a way to solve -- I keep going back to my factory floor example,

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if you're in a factory floor, you're going to have, I think sometimes referred to as pods, you're going to have sectors of the floor that are responsible for manufacturing certain subcomponents and together those pods work to produce the widgets.

And so there's interconnectivity between those, those each of their own network, and so you need to interconnect them to manage 'em and control the overall process. But you also have process control over the pod itself and so my interpretation of -- of Figure 5 is this idea of, you know, I'm connecting the conveyor belt system to the painting system and the two need to -- even though they operate, they need to be able to communicate across each other.

BY MS. FULLER:

Q. So does network access device 149 effectively act as a router to allow communication between the two systems?

MR. DETRIXHE: Objection, form.

A. Law does not specify its -- what layer of the protocol stack it operates on, so, you know, person -- you know, it would depend heavily on your use case for 149, whether it needs to route or whether it is just a simple transparent device that's -- transparent to the routing layer that provides that inter connectivity.

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BY MS. FULLER:

Q. So how does -- in your opinion, how would the communication from a device in Network 150A get to a device in Network 150B using the network access device 149?

A. It'd depend on the -- see -- very dependent on the application the Law leads us up to how it's being implemented. It could be a -- if we look at the OSI or even the TCP protocol layers, the lowest layer, the physical network layer could be just that type of access which would not be a route believe access. Everybody -- all devices would be in the same, speaking IP would be all in the same IP subnet, and does not preclude the fact that that device could also have -- have a -- an IP stack and, therefore, be a routeable device. He just -- he leaves that open to however you're going to implement the 149s relative to what you -- what you try to do.

Q. So where Law explains that Network 150A and Network 150B, these are separate networks, so when you communicate from one device to the other separate network device, how would this occur when they're separate networks?

MR. DETRIXHE: Objection, form.

A. I --

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(Court reporter interrupted for clarification.)

MR. DETRIXHE: Objection, form, lacks foundation.

A. If we look at, again, Figure 3 which -- which shows those two networks interconnected, again, Law leaves that open, but that could be that, you know, the 120 could directly talk to the 1 -- to the 150B, and unfortunately he didn't label the 120s as separate numbers, but the left-hand side 120 could just directly talk to any of the devices on the other side as it -- you know, 'cause they're on the same network, same physical network from a protocol standpoint.

So it would -- yeah.

BY MS. FULLER:

Q. When you say they're on a same physical network from a protocol standpoint, can you elaborate on that meaning?

A. Yeah -- yes, I can, sorry, yes. The -- from -- this is where it gets confusing from a network -- networking standpoint. If I -- when sometimes when people say the same physical network, they think about the same wire, same piece of copper, same piece of fiber-optic cable, et cetera.

When I'm talking -- here in this case when I

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talked about the same physical network, I'm referring to, in the TCP/IP model, layer one which means, for example, on the same ethernet, there's -- obviously on ethernet there's, you know, embedded in an ethernet network there are switches and other devices.

So when I talk about the same network, I'm referring to it from a physical network layer, not wires twisted together.

Q. So let's focus on the -- where Law describes Network 150A -- or 150A and Network 150B as local access networks, how does this communication take place between those two different networks?

MR. DETRIXHE: Objection, form.

A. Point me in Law where you're looking just so I have the right context.

BY MS. FULLER:

Q. Well, for instance, let's refer to Figure 3 where they have Network 150A.

A. Yep.

Q. And then Network 150B and then the network access device 149C, so there's two plans. How does this communication take place between these two separate LANs?

A. They can -- they take place via this network access device, the 149C, and so that device in Law's

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case, as I said, he leaves that open as to how that is physically implemented. But it could, you know, be as simple as a network switch, which would provide that connectivity.

Again he gives it properties of being able to -- in some cases being able to -- to bypass and, you know, so he -- he has more intelligence in it than you might find in your office shell switch.

Q. Can I direct you to Paragraph 94 of Law where it states that device 149 "may be used by the operator or other authenticated personnel to control network access between the site and the internet and as shown in Figure 5 between sites."

A. Which paragraph, I'm sorry?

Q. That's Paragraph 94 of Law.

MR. DETRIXHE: Objection outside the scope of Dr. Jacobson's declarations.

A. Okay, I found 94, yes.

BY MS. FULLER:

Q. So based on this passage, would an operator of Network 158 use a network access device 149 to decide whether devices in Network 158 have access to devices in Network 150B to communicate with?

MR. DETRIXHE: Objection, outside the scope of Dr. Jacobson's declarations.

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A. Law says "may be used to control access," so he has that as a -- as an option to control that access.

BY MS. FULLER:

Q. And when this option is used, can you explain, based on your understanding, how this controlled access would be implemented?

MR. DETRIXHE: Objection, outside the scope of Dr. Jacobson's declarations.

A. Implemented? How would --

BY MS. FULLER:

Q. In Law.

A. How would I build it, is that what you're asking?

Q. Correct.

A. So if I wanted to build a 149C that I could decide who gets to talk between 150A and 150B; is that what you're asking?

Q. Correct.

A. I could do that with a network switch with some filtering intelligence. I could say -- you know, again, depends on how the connectivity is done but, you know, I would start with a -- with some type of a switch. And then I could implement it with several different possible technologies. Based off of physical

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network addresses, I can build rule -- you know, build things into a switch that says a certain device cannot talk using the hardware address with another device, that's inherent in a lot of switches.

So there is multiple ways you could build this, so I -- depending on the -- you know, if I knew what 150A and B looked like exactly, I could come up with a better answer of how to build 149.

Q. If 150A and 150B are local area network accesses -- or network -- local area networks, how would that be implemented?

A. Local area networks running ethernet?

Q. If we do ethernet? If we do wireless?

A. Well, that's also ethernet, so...

Again, without seeing the exact, you know without having exact configuration, again, I would implement that if I -- if A and B are both ethernet networks, I would start with a -- with a device that does ethernet switching. And since A and B are both ethernet networks, the switches -- a switch can be programmed to a not-allows device to communicate across it. You know, that's a more sophisticated switch.

And, again, if I'm building this as a vendor, I'm going to have the ability to put in additional functionality into that switch. I probably couldn't do

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it by just taking a switch I bought at Best Buy and putting it in there, but if you're going to let me design something, then, yes, I could design it as a switch.

Q. Does each LAN 150A and 150B have a pool of private IP addresses assigned to the respective devices?

MR. DETRIXHE: Objection, form.

A. That would be a valid assumption for those devices that spoke IP. They would need -- they would need an IP address which would be a private IP address.

BY MS. FULLER:

Q. And which device would be responsible for allocating the network addresses in the LANs?

A. I'm not sure Law specifies who -- who does that, so I can only spec -- you know, again, we go back to how would I build it versus Law doesn't describe.

Q. Would the next work access device, 149, act as a network address translation when communicating between the two LANs?

MR. DETRIXHE: Objection, form.

A. Does not have to. Again, Law leaves it fairly open to what that device looks like, so if we're connecting to -- as our previous example, two ethernets together, then no network address translation would be

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needed.

BY MS. FULLER:

Q. When would a network address translation be needed?

A. Ah --

(Court reporter interrupted for clarification.)

MR. DETRIXHE: Objection, asked and answered.

A. So let me answer that differently.

So when would it be needed in -- in -- specific to this case? Or just in when you need network address translation?

BY MS. FULLER:

Q. In this case where there's two LAN networks.

A. There's not a really good use case to put network address translation in a -- if all the networks are private, so that's what I'm struggling with 'cause -- a network address translator is a device that -- it's use case is tra -- is public internet on one side, private internet on the other, and the -- in a typical implementation inside of Law, inside of any type of these networks is that everything in there is private, so there's no need to network address translate if you have only private addresses.

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Q. So, for example, read over to Figure 4 where we have the network access device 149 and it's going -- communication's going from the internet to the control system from public to private. That's where the use case would -- would come into play; is that correct?

MR. DETRIXHE: Objection, form. Outside the scope of Dr. Jacobson's declarations.

A. Well, in reference to Figure 4, the -- the industry standard place to put network address translation is in the firewall. That -- that sort of comes with -- I won't say free -- but that -- that is the place in where we see network address translation take place, so we would be in 146, not in 149.

Q. Dr. Jacobson, can we turn to Paragraph 64 of your '266 declaration.

A. '266?

Q. '266, Paragraph 64.

A. Hang on, should have printed them on different colored paper.

Q. I had one depo where I had four IPR proceedings that we were doing at the same time. That was -- that was a lot of numbers.

A. Oh, okay. 64 of --

Q. Yep.

A. -- '266.

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Q. Yep, correct.

A. All right, found it.

Q. All right. So in that paragraph you state, a "network access device, 149C, may optionally be provided to join LANs 150A and 150B together into a single Network 150."

Do you see that?

A. Yep. Yes, I do.

Q. How did you -- how did you form your opinion, and what evidence and rationale was the basis for your opinion on that?

A. So it came from Law, both Figure 3 in Law and Paragraph 51 that talks about a process connection between A and B. Also Paragraph 55 referring to 150 as a single network. So Law talks about 150 and then talks about A and B.

Q. So in Paragraph 55 and in Paragraph 51 forms the basis of your opinion in your '266 declaration; is that correct?

A. Those are -- yeah, those are the references in Law that help form that opinion, yes.

Q. Dr. Jacobson, do you have an understanding of what an inter network is?

(Court reporter interrupted for clarification.)

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Q. Inter network.
A. Lots of terms for that. I have an understanding, we have -- I'm not sure that's a -- that's a construct that's been agreed upon, so -- but I do have what I consider my understanding of a inter versus -- yeah, intranet.
Q. And what is your understanding of an inter network?
MR. DETRIXHE: Objection to form, outside the scope of Dr. Jacobson's declaration.
A. Yeah, the terms inter and intra are pretty close to being interchangeable. It's really -- in my opinion, it really is looking at -- you have these -- you have the networks they're under -- that you have, and so an inter network is just talking about how these things are -- you know, if you look at networks that need to be connected together, but they're all yours, so then you talk about the connectivity between those as being this -- this inter network, is at least a definition I would give it. It's not a term we really use too much.
BY MS. FULLER:
Q. So a network that needs to be connected together but they're all yours, what do you mean by that?

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A. They're under the same organization, same management, you know. It -- they're -- you know, the internet connects -- join networks together and so the whole goal of the internet itself is to connect networks together. And an inter -- intra -- intra is a -- doesn't imply -- so maybe that's my way of looking at it. Internet implies that we are using IP as the glue to put all this together. My view of a intra -- no -- what you asked about is that does not imply that we have to use IP to interconnect the networks. So other methods can be used to interconnect networks together and that gets back to this -- when I said all under the same, quote, ownership, 'cause I don't need internet to talk back and forth. So maybe that's a better way to look at it, is contrasting it to the fact that internet means I need an IP protocol to go across the internet.
Q. So then intranet work, basically, your understanding, wouldn't need an IP protocol?
A. Not necessarily. To me that's a -- it's a generic term that we're using as a way to say we're connecting things together. Like I said, it's not a very commonly used term.
Q. Is a definition of a inter network as a set of computer networks that may be dissimilar; is that a

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correct understanding of an inter network?
MR. DETRIXHE: Objection, form.
A. Yeah, I mean, just the -- now you're getting into -- that could be, yeah, okay. That is -- that's a characteristic. They do not have to be dissimilar and so -- so if we are trying to hook dissimilar networks, again depends on how we're trying to do it but that could be a term that would -- dissimilar networks would fall under, but just the term itself doesn't imply dissimilar networks.
BY MS. FULLER:
Q. So, for instance, we're connecting a WAN with a LAN. That would be a inter network?
A. I wouldn't put those together. That's just a single device that would connect a LAN to a WAN, so that's not really a network.
Q. Can we turn to Paragraph 83 of Law, Dr. Jacobson.
A. Okay, I found it.
Q. All right, I'm going to give you a minute or two just to -- to read that paragraph and let me know when you've completed that read-through.
A. You said 83, right?
Q. Pardon?
A. You said 83, right?

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Q. Correct.
A. Okay, that's...
Q. I am, maybe it might be my speaker, but I just was having a little bit of trouble. Came in a little muffled.
(Discussion off the record.)
Q. Did you get a chance to read through that paragraph?
A. Yes, I did.
Q. Okay. And what is your understanding of -- of that paragraph? What is it directed to?
MR. DETRIXHE: Objection, form.
A. He's -- I mean, he's discussing some of the graphical interfaces, some of the visual representations that would -- could be used in his system. So starts out by talking about a, you know, process control system. We typically draw the process that we're controlling, so you'll have pictures of conveyor belts and painting systems and pumps and so on and so he's talking about the fact that we're going to have a graphical system that will be the configuration of the -- again we'll go back to factory -- configuration of my factory.
And then he goes on and talks about there may be, you know, characteristics about each of the -- each



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of the elements that are represented by this graphical use of interface and that is then displayed to the user of this graphical interface. So you got a picture of the factory, you have the various objects, devices, and then there's visual representation of the current characteristics of those objects, those devices.

Q. Where it says UTMS-configured elements, what is your understanding of the UTMS-configured elements in Law?

A. So basically all -- any of the -- any of the devices, systems that can be managed, controlled, run over the network, so basically in Figure 3 pretty much everything has a line to it.

Q. And are those devices, are they managed or controlled by the operator workstations of the process control system?

MR. DETRIXHE: Objection, form.

A. So of the -- so some of the devices would be managed directly by the operator control station, but not necessarily all the devices would be directly controlled.

Q. So this paragraph -- is it a correct understanding that this Paragraph 83 is directed to the process control system of Law?

MR. DETRIXHE: Objection, form.

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A. It's anything that you -- that is in Figure 3, so anything of importance, so it can be any of the IT systems, databases, process, you know, control devices, you know, basically anything that the user of that particular interface needs to worry about. So it is not just process -- not necessarily just process control devices, but any -- any device that -- anything in that network that is of critical -- well, critical, that -- that particular user needs to -- needs in order for their particular function to carry out. So it's not just limited to...

BY MS. FULLER:

Q. And do the graphical display elements allow the particular user to carry out those functions of what they need to carry out?

MR. DETRIXHE: Objection, form.

A. Yeah, the user interface, its purpose is to allow a user to perform whatever function they need to perform, so -- and Law, again, doesn't specify what that is, but...

Q. Dr. Jacobson, can we turn to Paragraph 89 of your '266 declaration. Let me know when you get there?

A. Yep, I'm there.

BY MS. FULLER:

Q. All right. Feel free to take a second or two to skim over it.

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A. Okay.

Q. You state that "Law expressly recognizes prior art techniques for creating firewall rules by automatically locating devices and generating rules by passively analyzing traffic on the network."

Were you relying on Law's Paragraph 21 for your opinion?

A. That's a specific example where he called out a prior art.

Q. So that example formed your opinion in Paragraph 89?

A. That is one of the pieces that, yes, I used to craft my opinion.

Q. Did you look at the specific reference that is called out in Paragraph 21?

A. I don't recall looking at that particular reference.

Q. So is it a fair statement then that this Paragraph 89 where you stated that "Law expressly recognizes prior art techniques", the prior art techniques -- you only looked at Paragraph 21 for these prior art techniques?

A. Yeah, I don't recall looking at that particular...

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Q. So correct statement is that you did not analyze these prior art techniques, the documents themselves, in light of firm 305 in its use?

MR. DETRIXHE: Objection, form.

BY MS. FULLER:

A. The best of my recollection, I did not look at that particular patent.

Q. Can we turn to Paragraph 94 of your '266 declaration?

A. 94?

Q. Yes. And I'll let you skim it.

A. Okay.

Q. And let me know when you've completed your skim-through.

A. Okay.

Q. Okay. So based on your opinion, are these sources, 315, are they services that provide rapid updates to rulesets to help its subscribers, help their customer stay protected against merging and --

(Court reporter interrupted for clarification.)

Q. Changing network threats.

A. Yeah, you asked if the 315s did that.

Q. Correct.

A. Yes.

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Q. Would the subscriber be cyber risk management firm 305?
A. That would be the reference to Figure 3, that's how Law has that is that the services 305 subscribes to the 315s and then aggregates.
Q. And then the customers, would that be the process control system?
A. The customers for -- so...
Q. In the help the customer stay protected.
A. Oh, so the process -- the system in Law will get its data from 305 which is getting its data from the 315s.
Q. So they would be the customer in the -- this scenario?
MR. DETRIXHE: Objection, form.
A. Law's -- whoever implements Law is a customer of 305.
Q. So would firm 305 be a subscriber that receives from sources 315, the threat data with subset 305 uses this information to provide updated rulesets to its customers?
A. 305 would ingest the data from the 315s, so an embodiment that Law shows is that, yeah, you want to call them subscribers depends on how the 315s provide their data, whether it costs money or not.

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Q. So when you say "how they provide their data, whether it costs money or not," what do you mean by -- by that?
A. Certain -- certain of these 315s will provide their threat, whatever data they're providing they'll provide it without cost. Subscription implies money, so...
Q. So the subscriber could theoretically have to pay for the subscription or get it free, is that what you're stating?
A. Yeah, the -- right, there's -- you know, 'cause some of the 315s are obviously listed as companies, so...
Q. So in the scenario where the sources provide rapid updates to rulesets to help its subscriber, the subscriber would be, for example, firm 305?
MR. DETRIXHE: Objection, form.
A. The -- right, the interaction between 315 and 305, they would have some type of an -- of a subscription agreement and then 305 would -- would -- or I'm sorry, whoever implements Law would then subscribe to a service from 305.
BY MS. FULLER:
Q. And then 305 is the service and then that provides the information to Law's process control system?
A. Yes.
Q. Can we turn to Paragraph 87 of your '474 declaration now.
A. Which one?
Q. 87 of your '474 declaration.
A. Okay. Hang on. Okay.
Q. All right, so in that paragraph you state, "some sources 315 may be more trustworthy or reliable than others, and, therefore, it would have been obvious to communicate that information to a user, such as by adding a column to the rule Table 1300 shown in Figure 13, to indicate, for each rule, the sources that 315 upon which the rule is based."
Do you see that statement?
A. Yes.
Q. So is this -- so your analysis in this paragraph is it focused on the modification of Law's rule Table 1300; is that a correct statement?
MR. DETRIXHE: Objection, form.
A. State that again.
BY MS. FULLER:
Q. So your analysis in this paragraph is focused on the modification to Law's ruleset Table 1300; is that correct?

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MR. DETRIXHE: Objection, form.
A. My interpretation of 13 -- of the -- of Figure 13?
Q. So your interpretation of Figure 13 is based on modifying Law's ruleset table, correct?
MR. DETRIXHE: Objection, form.
A. Maybe I'm not understanding the question.
BY MS. FULLER:
Q. Would you like me to restate it again?
A. Yeah.
Q. Or rephrase it. I can rephrase it.
A. Yes. Yeah, I'm not -- it's not registering.
Q. So in Paragraph 87 you state it would have been obvious to communicate that information to a user such as by adding a column to the rule Table 1300 shown in Figure 13?
A. Okay, yes.
Q. So is this analysis then based on modifying Law's ruleset table?
A. Okay, now I see what you're asking, sorry. Well, I would say Law, that Column 1312, which is the description column, that's a column that can be used to describe the rule, get text, it's text to describe the rule.
So a person skilled of art would have

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understood that they -- under the description field, so you could -- could use that.
Q. Did your analysis factor at all -- factor in at all the firm 305?
MR. DETRIXHE: Objection, form.
A. I guess I don't know what you mean by -- I don't quite understand the question.
BY MS. FULLER:
Q. I can rephrase.
A. Thank you.
Q. So in this paragraph, did you consider firm 305?
A. Yeah, in my analysis, I considered 305 'cause that's part of the process.
Q. And where specifically in Paragraph 87 or any paragraph was this specifically considered?
MR. DETRIXHE: Objection, form.
A. It was considered my -- when I -- it's not -- well, this here is not inconsistent with having 305 in the picture. So 305 -- I guess I didn't explicitly write out 305. 'Cause the data ultimately is a -- is attributable to the 315s.
BY MS. FULLER:
Q. So your analysis does not explicitly write out or consider 305?

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MR. DETRIXHE: Objection, form.
A. The fact I didn't list it doesn't mean that 305 isn't -- that I wrote it out of the picture. The 315s are the true source of the data and 305 provides that service, so the discussion here is around where did that data come from, that data came from the 315s.
BY MS. FULLER:
Q. So can we go to Paragraph 92 of Law, I believe. Let me know when you get there.
A. Yep, I'm there. Yep.
Q. All right, would you like a second just to skim it over?
A. Okay.
Q. Okay. So in this paragraph, does the threat data from 315 go directly to the process control system and bypass firm 305?
MR. DETRIXHE: Objection, form.
A. He's discussing an alter embodiment may also be configured from 305 or from 315. So he's providing two embodiments.
Q. So is that a yes then, he's providing an embodiment where the threat data goes directly to process control system?
MR. DETRIXHE: Objection, form.
A. He is indicating that that -- yes, that the

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threat data can come correctly from the 315s or it can come from the 305.
BY MS. FULLER:
Q. And where it goes directly from the 315s, Law's process control system would be aggregating the information and updating its rulesets?
A. If the data came from the 315, then that data would be ingested by the -- by the firewalls and used to update their rulesets.
Q. And under this scenario, Law itself doesn't contemplate having a ruleset column with an indication of a thief; is that correct?
MR. DETRIXHE: Objection, form.
A. Again, I -- I go back to the Figure 13 where Law contemplates or outlines a description of the rules and so given, you know, that their rules are going to -- and Law talks about the fact that there's some sources that are more reliable, better than others, then it makes sense that there would be some way to indicate where that rule came from.
BY MS. FULLER:
Q. Where does Law specifically he talk about that some sources are more reliable or better than others? Can you point me to a specific passage?
A. Yeah, it's going to take me a few minutes to

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remember where I read that.
Q. Take your time.
A. In reading 88, 89, some of 90, Law talks about characteristics of rules, priorities rules based on risk, danger, so Law outlines that these rules have different characteristics. Let's see...
To me it's reading those so it's hard to pull out a single, but Law clearly talks about there's different characteristics that we get.
Q. But nowhere does it talk about the fact that some sources that are more reliable are better than others; is that correct?
MR. DETRIXHE: Objection, form.
A. I can't say a hundred percent that that's not in there, 'cause I did not -- as I'm sitting here, I have a recollection of it but I also have not sat down and we're sitting here reading through the whole...
BY MS. FULLER:
Q. And I will not force you to do that exercise.
So we have been going on the record for a little over an hour and 10 minutes. Let's take a 10-minute break. Off the record.
(At 11:49 a.m. - Recess was taken.)

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(At 12:02 p.m., with all parties present as before, the following proceedings were had, to-wit:)
BY MS. FULLER:
Q. Dr. Jacobson, can I have you look at Exhibit 1009. It's marked as Exhibit 1009 already, in the '474 IPR.
(Exhibit No. 1009 previously marked in prior deposition.)
A. And which -- what?
Q. Golnabi, that's how you pronounce it?
A. Oh, thank you. I don't have 'em by -- Golnabi. And let me find -- 1008?
Q. I believe it's marked as 1009. If you don't have it, I can upload it too.
A. This is Analysis of firewall Policy Rules Using Data Mining Techniques?
Q. Correct.
A. Okay, all right. Yes. Yep, I have it.
Q. Perfect.
Roughly how much time did you spend reviewing Golnabi reference?
A. I don't know, several -- several hours. It's not a really long reference.
Q. And this is in the process of writing your '474 declaration you spent time reviewing Golnabi,

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correct?
A. Yes. Yes.
Q. Can you turn to Paragraph 80 of your '474 declaration. Let me know when you get there.
A. 80?
Q. Correct.
A. All right, I'm there.
Q. All right. So in this paragraph you state that, "Golnabi teaches merging a plurality of rules using an aggregation algorithm to generate a minimum number of firewall policy rules for efficiency, and that these rules are then aggregated by combining to get one generalized rule."
Do you see that?
A. Yep.
Q. Can you take me through this process in Golnabi to what your understanding of the process is?
MR. DETRIXHE: Objection, form.
A. You're looking at the algorithm. I don't understand what you mean by --
BY MS. FULLER:
Q. Specifically the process where the rules are aggregated by combining to get one generalized rule, what is your understanding of Golnabi's process --
MR. DETRIXHE: Objection, form.

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BY MS. FULLER:
Q. -- doing that?
A. So he'll -- he'll take a -- let's see find the picture where he does that, one second.
Well, he -- yeah, he describes it starting -- oh, what he has is Paragraph C of Page 307 and then he goes through, talks about how he gets the data, then he continues on Page 308 talking about some of the common characteristics he would be looking for as he's looking to merge rules.
And on 309 he actually gives some pseudo code to look at how he would do -- think that's a pseudo code for that, let me reread that.
So, yeah, like in 309 he talks -- second paragraph he talks about, you know, taking rules. For example, these, you know, taking IP addresses and aggregating them together and so that, you know, he says it in a lot of words.
Q. So does Golnabi look to original firewall rules to create firewall policy data log --
MR. DETRIXHE: Objection.
Q. -- is that part of the process?
A. He has a section -- you know, again his paper's broader, but so he has a part where he talks about where the rules could have come from, and then

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talks about how for efficiency, et cetera, we need to put the rules together and so where he got the rules isn't really relevant, it's the fact that he is teaching the fact that we need to aggregate these rules together and sort of end up with a more efficient set of rules.
Q. But where the -- are these original rules that are used to create firewall policy data logs, I guess that -- that's my question?
MR. DETRIXHE: Objection, form.
A. Can you repeat that again. I -- I'm still having a --
BY MS. FULLER:
Q. Yeah.
So are original firewall policy rules used to create policy firewall policy log data that's used to mine attributes, such as IP addresses.
MR. DETRIXHE: Objection, form.
A. So, again, he sort of has -- he talks about a -- doing data mining, which really isn't pertinent to what we're talking about, and then he goes on to talk about: Now I have rules that I've gotten and now I need to process those rules and either doing a combination splitting, you know, some sort of correlated rules or else it talks about reordering nine



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rules for efficiency, so -- so he really has two pieces to his work and the part that's relevant to my analysis is the part where he discusses, "and now I got all these rules, what can we do with 'em."

Q. So the rule that he's gotten --

(Court reporter interrupted for clarification.)

Q. So the rules that he's gotten, are these primitive rules that are then aggregated or combined together?

MR. DETRIXHE: Objection, form.

A. What are you defining as a primitive rule?

BY MS. FULLER:

Q. The -- when you say he goes on to talk about, "now I have rules that I've gotten and now I need to process those rules," that's the rules that I'm -- I'm referring to.

A. Okay, I'm not sure I would use primitive, but he -- he talks about a method to process a set of rules so that you can combine them, potentially split them or reorder them. So -- so he's talking about being able to manipulate a ruleset.

Q. Based on mining firewall policy data logs; is that correct?

A. That's the first part of his -- again, did

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not rely on that piece, relied on the -- you know, we now have rules and he teaches methods to correlate the rules together so that's the part that -- that is of interest in his paper.

Q. And can -- when you say "he teaches methods to correlate the rules together," what specifically is a method for his correlation?

MR. DETRIXHE: Objection, form.

A. Again, as I said earlier, he talks about ways to combine rules, split rules and so when you're combining, you're taking things that can be put together so you're finding those things that can be put together and you're putting them together, so that is a correlating type of function.

Q. So, for instance, he's looking at the IP address?

A. That would be a -- yeah, that would be one of the -- of the factors that can be used to determine if rules ought to be combined.

Q. And then based on that attribute, then he's combining the ruleset, correct?

A. That and an additional attributes so it's not -- that isn't the only attribute, but that would be -- that would be an attribute that you would use to combine.

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MS. FULLER: Okay. Dr. Jacobson, I have no further questions.

THE WITNESS: Oh, okay.

MR. DETRIXHE: All right, I just had a few for redirect.

I can go ahead and start if you're really, Counsel?

MS. FULLER: Can we go off record for five minutes?

MR. DETRIXHE: Sure.

(At 12:14 p.m. - Recess was taken.)

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(At 12:18 p.m., with all parties present as before, the following proceedings were had, to-wit:)

CROSS-EXAMINATION

BY MR. DETRIXHE:

Q. Okay, Dr. Jacobson, I just had a few quick questions for you. I would like to direct your attention to Paragraph 92 of Law. Please let me know when you're there.

A. Yep.

Q. And specifically I would like to focus your attention on the last couple sentences or so. I'll go ahead and read them.

"The sources 315 may create the threat data 310 by monitoring, defining and analyzing potential and known threats to the security of the process control network's 150. For example, data from the Vulnerability Research Service, VRS, of Assurent Secure Technologies, the Computer Emergency Response Team, CERT, of Carnegie Mellon University, Secunia, end user research and monitoring and data from Achilles certified product users, to name but a few of the sources for firewall ruleset data, may be aggregated."

Do you see that?

A. Yes.

Q. Is it your understanding that this portion of

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Paragraph 92 is providing examples of the source 315s?
A. Yes.
Q. I would like to direct your attention to Figure 3.
A. Yes.
Q. And you see where -- the bubbles for the 315s here?
A. Yes, 315 bubbles, yes.
Q. All right. How many bubbles do you see there corresponding to the 315s?
A. Six.
Q. Is that more than the examples specifically identified in Paragraph 92?
A. Yes.
MS. FULLER: Objection, leading.
BY MS. FULLER:
Q. So there was some discussion earlier -- well, before I get there, I just want to clarify that: Is it your understanding that the examples of 315s in Paragraph 92 aren't limiting and that there may be others?
MS. FULLER: Objection, leading.
A. Yeah, the paragraph he's giving examples, he starts out by saying for example, data from, and then lists so he starts that paragraph by saying for

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example.
BY MS. FULLER:
Q. Okay. Thank you.
I understand there was some discussion earlier about whether Law explicitly stated that some of the sources 315 may be more trustworthy or reliable than others. I would now like to focus your attention on your understanding of how a person of skill in the art would have viewed the trustworthiness or reliability of the sources 315, and so just wanted to ask that question: Is it your opinion that a person of ordinary skill in the art would have understood that some sources 315 may be more trustworthy or reliable than others?
MS. FULLER: Objection, leading.
A. The data that you get from any of these types of services are based on multiple factors and some of which is just the organization itself and it's personnel and et cetera.
Some of the data may actually be specific, some of the data may come from vendors, some of the data may be vetted by the government and so by its very nature, these -- these organizations that provide intelligence or provide rules, you know, may gather from different places.

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So there -- a person in the skill of the art would understand that some sources would be more reliable and in part due to how they get their information and how reliable that information might be. You know, a data source that came from a -- you know, the FBI or, you know, back in that time would have been the FBI, or National Security Agency would have a higher level of, I hate to use the word trust, but a higher level assurance that that data is valid than may come from a source that is not -- doesn't have the resources that the federal government would have.
MR. DETRIXHE: All right, thanks. That concludes my questions.
MS. FULLER: Let's go off the record for one minute.
(At 12:24 p.m. - Recess was taken.)

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(At 12:26 p.m., with all parties present as before, the following proceedings were had, to-wit:)
MS. FULLER: I have no further questions. No reading and signing.
Orders:
MS. FULLER: I believe our standing order is rough transcript, final by October 11th.
MR. DETRIXHE: That works for me as well, with rough.
(12:30 p.m. - Adjournment.)
** ** ** **

C E R T I F I C A T E

STATE OF NEBRASKA )
: ss.
COUNTY OF LANCASTER )

I, Christine M. Salerno, Registered Professional Reporter, General Notary Public within and for the State of Nebraska, do hereby certify that the foregoing testimony of DR. DOUGLAS JACOBSON was taken by me in shorthand and thereafter reduced to typewriting by use of Computer-Aided Transcription, and the eighty (80) pages contain a full, true and correct transcription of all the testimony of said witness, to the best of my ability.

That I am not a kin or in any way associated with any of the parties to said cause of action, or their counsel, and that I am not interested in the event thereof.

IN WITNESS WHEREOF, I hereunto affix my signature and seal this 10th of OCTOBER, 2023.

_____
Christine M. Salerno, RPR
GENERAL NOTARY PUBLIC
Registered Professional Reporter

My Commission Expires: October 02, 2023.

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