

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WESTERN DIGITAL TECHNOLOGIES, INC.,
Petitioner,

v.

SHAMROCK INNOVATIONS, INC.,
Patent Owner.

IPR2023-00842
Patent 9,535,454 B2

Record of Oral Hearing
Held: July 17, 2024

Before SHEILA F. McSHANE, GARTH D. BAER, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

APPEARANCES:

ON BEHALF OF THE PETITIONER:

KENNETH BROOKS, ESQ.
JON TREMBATH, ESQ.
Michael Best & Friedrich LLP
790 N Water Street
Milwaukee, WI 53202
(414) 270-2725

ON BEHALF OF THE PATENT OWNER:

BRANDON THEISS, ESQ.
CONRAD HELLWEGE
Volpe Keonig
30 S 17th St., 18th Floor
Philadelphia, PA 19103-4005
(215) 255-9241

The above-entitled matter came on for hearing on Wednesday, July 17, 2024, commencing at 1:00 p.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

P R O C E E D I N G S

- - - - -

JUDGE BAER: Okay. Good afternoon, everyone. This is our hearing for IPR 2023-00842. I'm Judge Baer. With me should be Judges Ahmed and McShane. There's Judge Ahmed, Judge McShane. Give me a nod if you can hear us. Looks good. Judge McShane. Okay.

Let's get the parties' appearances if we could, please. Who do we have for Petitioner?

MR. TREMBATH: Jon Trembath. With me is Sam Brooks. He'll be doing the argument today.

JUDGE BAER: Great. Thank you, Mr. Brooks. And who do we have for Patent Owner?

MR. THEISS: Brandon Theiss from Volpe Keonig. We'll be arguing. Also with me is Conrad Hellwege, who will just be observing.

JUDGE BAER: Great. Thank you, Mr. Theiss. We set forth the hearing for today's -- we set forth the procedure rather for today's hearing in our trial order, so I trust you all have that and reviewed that. But just to make sure everybody knows how this will go, we gave the parties each 60 minutes a side. I believe, Petitioner, we have a LEAP practitioner with us, so we're going to give you another 15 minutes. That's great.

We have the full record in front of us. We have your slides in front of us. But if you would, just, if you're referring to something, just to keep the record clear, if you would mention what slide you're referring to; or if you're referring to something in the record, refer to that record document if you would.

1 I think that's everything. Does counsel for Petitioner have any
2 questions before we get going?

3 MR. BROOKS: No, Your Honor.

4 JUDGE BAER: Great. And counsel for Patent Owner before we get
5 going?

6 MR. THEISS: No, Your Honor.

7 JUDGE BAER: All right. With that, we're ready to begin. Petitioner,
8 Mr. Brooks, correct? You'll be presenting?

9 MR. BROOKS: That's correct.

10 JUDGE BAER: Great. Whenever you're ready. First of all, do you
11 wish to reserve any time for rebuttal?

12 MR. BROOKS: Yes, please. Fifteen minutes.

13 JUDGE BAER: Great. So we'll put 60 minutes on the clock. And
14 you may begin whenever you are ready.

15 MR. BROOKS: Thank you.

16 MR. THEISS: Your Honor, before we begin, it looks like we've lost
17 Judge Ahmed.

18 JUDGE BAER: All right. Let's give it just a minute while that's
19 booting. Judge Ahmed can hear us. It's just that the video is frozen, so let's
20 go ahead and proceed, and Judge Ahmed -- it looks like we're kind of getting
21 him back anyway. So, Judge Ahmed, let us know if you can't hear us.
22 Thank you.

23 JUDGE AHMED: I can hear you.

24 JUDGE BAER: Great.

25 MR. BROOKS: Good afternoon. Today, we're here to discuss U.S.
26 Patent No. 9,353,454 and, specifically, Claim 1 of that patent. Within Claim

1 1, there are two limitations at issue with respect to our Petitioner's first
2 argument.

3 JUDGE BAER: And, again, counsel, if you would, just let us know
4 what slide you're on, to the extent you can remember. We'd appreciate it.

5 MR. BROOKS: Yes, Your Honor. Turning to Slide 6, the first
6 element we'd like to discuss is wherein the module is further configured to
7 transmit the flow control signal through the serial link and the connector
8 without passing the flow control signal through the second buffer. We will
9 show that a person having ordinary skill in the art would be informed that
10 the combination of Vangemert and Copeland, as presented in the petition,
11 teaches all elements of Claim 1. Vangemert expressly teaches each of these
12 elements, and this is fully supported by the testimony of Dr. Caloyannides.
13 Dr. Grimsrud confirms the testimony of Dr. Caloyannides and provides
14 further support to show these teachings and rebuts the Patent Owner's
15 unsupported conclusion or positions to the contrary. Dr. G's -- sorry, Dr.
16 Grimsrud's testimony is fully supported and un rebutted, other than by non-
17 evidentiary conclusory attorney argument.

18 Returning to Vangemert, which is the primary reference cited against
19 Claim 1 shown on Slide 7, Vangemert expressly teaches transmitting a flow
20 control signal through the serial link and the connector without passing the
21 flow control signal through the second buffer. The claim language shown in
22 the second bullet on Slide 7 states that when the received controller receives
23 a control word indicating that a remote node, which is to transmit data, the
24 buffer credit manager is enabled and the transmit controller begins
25 transmitting buffer credit control words in response to a credit signal from
26 the buffer credit manager.

1 Also shown on Slide 7 is a reproduction of Figure 4 annotated as
2 shown in the petition. As shown, element 412 is a transmit controller.

3 JUDGE MCSHANE: I'm sorry, counsel. This is Judge McShane.
4 First of all, apologies because I can see I'm blinking on and off in the
5 hearing room. I don't know what's going on. I think it's just a data
6 transmission glitch.

7 But let me ask you a question about the flow control signal. You just
8 referred to the buffer credit control words, and what I was reading, I believe
9 it's page 31 of the petition, I was a little confused as to what you're asserting
10 the flow control signal is exactly. And also, and this is sort of a compound
11 question here, can you explain to me how the buffer credit control words
12 work with the buffer credit signal because you refer to both of those terms
13 when you're talking about flow control signal on page 31 of your petition.

14 MR. BROOKS: Yes. If you look at Figure 4, the buffer credit
15 manager, 418, is configured to generate buffer credit signals. Sorry. I'm
16 trying to -- this is also referred to in the first bullet point on Slide 7. Buffer
17 credit manager generates a signal when there's sufficient space in the buffer,
18 which is then translated to the transmit controller. This signal is packaged
19 into the buffer credit control word, which is then sent out via the transmit
20 controller to the encoder, which then subsequently goes out through the
21 transceiver, as shown on the left-hand side of Figure 4, and then out into the
22 rest of the circuitry of Vangemert and then, thusly, out on a serial link.

23 Could you repeat the second part of your question? I apologize.

24 JUDGE MCSHANE: I'm sorry. Where it says -- can you hear me
25 now?

26 MR. BROOKS: Yes.

1 JUDGE MCSHANE: Can you hear me? Okay. Thank you. Can you
2 explain to me how the buffer credit control words work with the buffer
3 credit signal? Can you explain that interaction?

4 MR. BROOKS: Yes. So the buffer credit signal informs the transmit
5 controller to begin transmitting buffer credit control words. These buffer
6 credit control words are what are sent to the, in this case, device wishing to
7 transmit, informing it that it can, therefore or thereby, transmit data to the
8 receiving device. Vangemert operates on a buffer credit-type flow control
9 mechanism, as opposed to other types of flow control mechanisms, whereas
10 the amount of space in the buffer becomes sufficient to accept new data
11 words, these are sent only upon there being a credit provided to the receiving
12 device or, excuse me, the device wishing to transmit. There may be multiple
13 credits issued. There may be a point where there are no credits had by the
14 other device, and the buffer credit control word provides that buffer credit
15 such that the other device knows that it can provide said transmission.

16 JUDGE BAER: So would it be fair to characterize the buffer credit
17 signal as the internal credit signal and the credit control word is what is sent
18 to the other device to control the other device? Is that a fair
19 characterization?

20 MR. BROOKS: That's correct, Your Honor.

21 JUDGE BAER: And is that in the record? Is that just my
22 understanding? Is there expert testimony on that? Does Vangemert say that
23 explicitly?

24 MR. BROOKS: Yes. So give me one second here.

25 JUDGE BAER: Sure. Take your time. And if I could point, just in
26 the interest of time, to column 4, roughly lines 8 through 20-ish of

1 Vangemert. Is that the relevant section, or is there something more explicit
2 on --

3 MR. BROOKS: No. Within Vangemert, column 4, lines 8 through,
4 say, 23, are the main sections regarding how this system works. So, again,
5 when the received controller receives a control word indicating the remote
6 node wishes to transmit data -- again, I'm citing from Vangemert directly --
7 the buffer credit manager is enabled and the transmit controller begins buffer
8 credit -- excuse me, begins transmitting buffer credit control words in
9 response to a credit signal from the buffer credit manager. If you follow up
10 to the secondary paragraph in column 4, it does describe the generation of
11 the credit signal, which is based on determining that there is sufficient space
12 within the buffer to send this signal. So the transmit controller is effectively
13 creating the buffer credit control word to send the device. It's packaging
14 what it's receiving from the buffer credit manager and outputting it to the
15 transmit -- excuse me, to the output.

16 JUDGE BAER: So something Judge McShane was referring to, in
17 your petition, it struck me that you were a little bit less than clear on whether
18 it was the buffer credit signal or the buffer credit control word or some
19 combination of both of them that was the actual control word. It seems like,
20 in your petitioner reply, you clarify that, no, it's just the buffer credit control
21 word. My question for you is, you know, can you clarify now that it is only
22 the buffer credit control word, not some combination of the two, that is the
23 claim signal?

24 MR. BROOKS: That's correct, Your Honor. And you are correct that
25 we did try to -- we clarified that in our reply.

1 JUDGE BAER: But now it's just the buffer credit control word, so we
2 can ignore and sort of jettison all of Patent Owner's arguments that the
3 buffer credit signal doesn't meet the claims because it is not transmitted. We
4 don't even -- you would concede that. It doesn't matter. We're only relying
5 on the buffer credit control word; is that correct?

6 MR. BROOKS: That's correct, Your Honor.

7 JUDGE BAER: Thank you.

8 MR. BROOKS: Moving to Slide 8, Dr. Caloyannides, who has
9 extensive experience in the serial communication space, testified that a
10 person having ordinary skill in the art would understand that the buffer
11 credit control word of Vangemert is not passed through the transmit buffer.
12 He testified that Vangemert provides a fast, low-latency fiber channel
13 system by sending the buffer credit control word directly to the encoder
14 from the transmit controller without passing through the transmit buffer.

15 JUDGE BAER: Actually, Mr. Brooks, if we could back up. Before
16 we get to the expert's articulation of what's likely here and what he thinks is
17 going on, if you go back to, I want to talk about Vangemert's express
18 disclosures one more time.

19 In your briefs, you focused on the word begins a lot. That is
20 Vangemert, column 4, line 15. It says transmit controller begins
21 transmitting buffer credit control words in response. You frequently
22 highlighted that word begins. I don't understand why that helps your
23 argument because I understand the dispute to be not where it begins but
24 whether it begins there, transmits to a buffer, right, namely the transmit
25 buffer 410 of Vangemert, and comes back to the transmit controller. So can
26 you explain to me the argument about how that word begins or, two words,

1 begins transmitting, helps your argument that that word never hits the
2 transmit buffer? Is my question clear?

3 MR. BROOKS: Yes, Your Honor. When we read the passage in the
4 second bullet on Slide 7, and our focus on begins transmitting buffer credit
5 control words, there is no intermediate step discussed. It is simply it
6 receives a signal, and then it is configured to begin transmitting buffer credit
7 control words in response to a credit signal. There is other portions of
8 Vangemert, which we can discuss, that discuss which control words are
9 placed into the transmit buffer.

10 JUDGE BAER: But those data control words, those aren't generated
11 in the transmit buffer, are they?

12 MR. BROOKS: I believe that you're referring to the control words
13 that are transmitted with data packet?

14 JUDGE BAER: That's right. So we're now looking at Vangemert,
15 column 3, line 49. It says the transmit controller retrieves control words and
16 data frames from transmit buffer 410 and forwards them to an encoder.
17 Now, I understand your argument that those are data control words, those
18 aren't data flow control words. That's fine. But what I'm asking is how does
19 that word begin help you? I don't think anybody is arguing that any control
20 words, be they flow control words or data control words, are generated in the
21 transmit buffer, so why does it help you that it says the transmit controller
22 begins transmitting buffer credit control words? Isn't the question not who
23 begins it but whether the transmit controller begins to transmit those buffer
24 credit control words, sends them to the transmit buffer, and then sends them
25 back, as is the case with the data control words? Isn't that the issue?

26 MR. BROOKS: Yes, that is the issue.

1 JUDGE BAER: So how does that word begins help you?

2 MR. BROOKS: I think begins transmitting buffer credit control
3 words has to be looked at in context with the goals of Vangemert, which are
4 to provide low-latency systems --

5 JUDGE BAER: No, I understand that. But is it that it begins
6 transmitting? Is that the point, that it's transmitting, it's not buffering? Is it
7 transmitting, or is it the fact that the word is actually generated in the
8 transmit controller that matters?

9 MR. BROOKS: I believe it is that the word is actually generated in
10 the transmit controller.

11 JUDGE BAER: How does that determine whether it then gets sent to
12 the transmit buffer or not?

13 MR. BROOKS: Again, as we point out, there is no reason why it
14 would send it to the transmit buffer. The transmit buffer is associated with
15 the data control, as stated. It's coupled to the IO bus, transmitting and
16 oversees the data, and has to build the data packets along with the control
17 words there.

18 A flow control signal, such as a buffer credit control word, needs to be
19 output quickly, and there are several reasons for that. If we turn to the
20 testimony of Dr. Grimsrud, he provides several reasons why one would not
21 put the flow control signal into the transmit buffer. For one, it goes against
22 the goal of fiber channel described in Vangemert. We're now referring to
23 Slide 10. Dr. Grimsrud testified that doing so is adverse to sound
24 engineering practices, and it would add unnecessary steps and increased
25 latency over the system which the transmit controller begins transmitting the
26 buffer credit control word in response to the credit signal.

1 Turning to Slide 11, one of the first reasons for this, Dr. Grimsrud
2 testified regarding creating an unbounded system. This unbound system
3 occurs where, in part, where data word sizes may be unknown and the buffer
4 size may be quite large. In this instance, where a control word is put into the
5 transmit buffer, it would be unknown when the control word, the buffer
6 credit control word would be transmitted. This creates data validation
7 issues, as well as design issues, and it would never be known when the flow
8 control signal may actually be transmitted across the link.

9 Further example of a fault with putting it in the transmit buffer would
10 be the occurrence of a deadlock condition, as described on Slide 12.

11 Turning to Slide 13, we have the exact example outlaid by Dr. Grimsrud.
12 The illustrations to the right are illustrative of that example that he provided.

13 In the image shown on Slide 13, there's device A and device B. In
14 this instance, we'll assume it's a duplex communication between the two, as
15 laid out in the example. In this instance, both devices may be transmitting
16 data to one another or to other devices because fiber channel is not a direct
17 point-to-point signal but rather a, I believe, green type architecture. So in
18 this instance, we see that the first in -- in the buffer, the transmit buffer are
19 the data packets both in device A and device B and both have a buffer credit
20 control word in the transmit buffer behind the data packet.

21 However, in this condition, both device A and device B have no
22 available buffer credits. Accordingly, as the buffer credit control word has
23 no path to exit the buffer as it is placed behind the data packet, it is
24 conceivable that data would stop between the two devices as there is no
25 credit and no means to provide a new credit to either device. This clarifies
26 where we begin -- why we believe it is important to say that when it begins

1 transmitting, that means it is getting that signal and immediately begins
2 transmitting it without putting it in the buffer behind the data.

3 JUDGE BAER: So it's really that it begins transmitting. That's the
4 key. It says it's enabled, and the very next words before it says anything
5 about passing it to a buffer is it begins transmitting, right?

6 MR. BROOKS: Correct.

7 JUDGE BAER: Because it's really the combination of begins in
8 transmitting that's the key?

9 MR. BROOKS: Yes, Your Honor.

10 JUDGE BAER: That's helpful. Thank you.

11 MR. BROOKS: Again, returning to Slide 8, Dr. Caloyannides
12 supported the position by the Petitioner in the interpretation of Vangemert,
13 noting that to do otherwise would go against Vangemert for providing a fast
14 low-latency fiber channel system by sending the buffer credit word -- control
15 word directly to the encoder. In fact, Mr. Lee seemed to agree, stating that
16 the buffer credit system of Vangemert ensures efficient and timely flow
17 control in the network, including allowing for the sender to adjust its data
18 transmission rate in real time, as shown on Slide 9. And this -- the
19 comments of Mr. Lee can be found in Exhibit 2002 at paragraph 55 and
20 paragraph 78 through 79.

21 As put out in Petitioner's reply, Dr. Grimsrud further put out
22 testimony supporting Dr. Caloyannides' previous positions. Dr. Grimsrud
23 has extensive experience in the serial control world and, in fact, went on to
24 become a lead founding member of SEDA, which is a subsequent serial
25 communication protocol. Before we believe his testimony should carry
26 subsequent weight, again, as noted in Slide 10, Dr. Grimsrud testified that

1 storing the buffer credit control word in the transmit buffer would be
2 illogical and adverse to sound engineering practices, as doing so creates
3 unnecessary steps and increases latency.

4 We've already discussed the issues and the examples provided by Dr.
5 Grimsrud highlighted in Slides 11 and 12 and 13.

6 Dr. Grimsrud, in further support of his arguments, cites the to the
7 Tachyon article. The Tachyon article was cross-referenced in Patent
8 Owner's Exhibit 2012 and was the immediately following article in that
9 journal and shares a complementary author.

10 JUDGE BAER: Mr. Brooks, just to cut to the chase of the parties'
11 dispute on this, is it your position that the Tachyon article disclosed sending,
12 discloses sending control words without touching the buffer, or is it your
13 position that the Tachyon article teaches that Vangemert teaches the control
14 word not touching the second article?

15 MR. BROOKS: It is more of the latter. Dr. Grimsrud relied on
16 Vangemert to supply additional evidence as to how a fiber channel system
17 would occur.

18 JUDGE BAER: But why does Vangemert describe how Tachyon --
19 excuse me. Why is -- let me start over. Why does the article, the Tachyon
20 article, describe how Vangemert works? Is there anything affirmative in the
21 Tachyon article that says this is the only way to do it in any disclosure of,
22 you know, sending a control word has to go this way, or isn't it just a
23 preferred way to do it?

24 MR. BROOKS: The Tachyon article describes fiber channel
25 operation. Fiber channel is a standard. Vangemert uses the fiber channel
26 standard to communicate. Vangemert's main issue or, excuse me, main

1 point of invention is how the credits are calculated within the system upon
2 receiving data and other buffer credit control words from other devices.

3 JUDGE BAER: So your standards argument is an interesting one. I
4 have two questions for you, that indeed the Tachyon article is a standard and
5 Vangemert uses that standard. One, was this argument in your briefs? And,
6 two, well, I guess, in addition, can you point us to those affirmative
7 disclosures that it is a standard and that Vangemert uses that standard? You
8 don't have to do that on the fly right now. You can save that for your
9 rebuttal time, but that would be something that would be helpful to us.

10 MR. BROOKS: Thank you, Your Honor. I will save that for --

11 JUDGE BAER: But, again, I think we can save the argument of what
12 the Tachyon article teaches. I don't think there's any dispute about that. It's
13 just a question of whether that is a standard that is used in Vangemert or that
14 is sort of a standalone reference.

15 MR. BROOKS: Yes. On that note, based on your comments, would
16 you prefer to move on from Tachyon?

17 JUDGE BAER: I think that would be helpful, yes. I would you like
18 you to hit it, if you would, hit that issue if you would, in rebuttal, but I think
19 can move on, yes.

20 MR. BROOKS: Yes, Your Honor. So moving to the next element of
21 Claim 1, as shown in Slide 20, where in the module is operable to generate a
22 flow control signal in response to the amount of data stored in the first buffer
23 equaling or exceeding the fill amount. In this, first, we note that Patent
24 Owner waived this argument and only filed any comments to it in their
25 surreply, which is subject to Petitioner's motion to strike. The Patent Owner
26 did not address any of Patent Owner's arguments regarding this element, in

1 particular with respect to Vangemert, in their response. It was addressed for
2 the first time in the surreply.

3 As noted in our motion to strike, this is prejudiced to the Petitioner
4 that we were not able to depose Mr. Lee about any teachings thereof. And,
5 further, we were not able to brief this matter in more detail.

6 JUDGE BAER: All right. Let's assume you're right, and now I'm
7 going to give you your best chance right now to describe to me how
8 Vangemert affirmatively discloses its trigger being in response to meeting or
9 excelling a fill amount. Okay, so this is your opportunity because I thought
10 it was relatively clear from the petition the difference. One says meeting or
11 excelling, and the reference itself says when it's less than, so that seemed
12 pretty clear from the petition. And you're saying we were prejudiced by
13 their not raising it. So here's your opportunity to explain to me how
14 Vangemert's disclosure is an affirmative disclosure of the claim limitation,
15 which is meeting or excelling.

16 MR. BROOKS: Thank you. Vangemert recites generating flow
17 control signal in response to the amount of data stored in the first buffer
18 equaling or exceeding the fill amount, equaling being the key word. The fill
19 amount of Vangemert as cited in the petition at pages 27 to 28 -- and, excuse
20 me, we're on Slide 21 -- the fill amount of Vangemert is equal to the
21 available buffer capacity, less committed buffer space, as determined by the
22 buffer credit manager 418. The buffer credit manager 418 generates a credit
23 upon determining that the committed buffer space is less than the available
24 buffer capacity by at least the size of the one data frame. This credit is then
25 packaged into the buffer credit control word by the transmit controller as
26 described previously.

1 The generation of this credit signal and the subsequent packaging into
2 the buffer credit control word teaches generating a flow control signal in
3 response to the amount of data stored in the first buffer equaling the fill
4 amount.

5 JUDGE BAER: So the key -- the key disclosure is this special
6 equaling case, right? You would agree that Vangemert's signals are only
7 sent when there is sufficient space, not when it's exceeding the space. So the
8 key time, and I see there your slide, can you -- what is the slide number
9 there?

10 MR. BROOKS: Sorry. Slide 22.

11 JUDGE BAER: So it's this special equaling case.

12 MR. BROOKS: Correct.

13 JUDGE BAER: So where is Vangemert's disclosure that when you
14 have completely run out of room, you come to that exact cap space, this
15 exact fill amount, equaling the fill amount, that you are still going to send
16 that control word credit that allows, that allows data flow?

17 MR. BROOKS: I believe that was described above, that it teaches it -
18 -

19 JUDGE BAER: What slide number are you on?

20 MR. BROOKS: I'm on Slide 21. The buffer credit manager generates
21 a credit upon determining the committed buffer space, the fill amount, is less
22 than the available buffer capacity by at least the size of one data frame.

23 So if we turn to Slide 22, we provided figures here that represent the
24 operation of both the '454 first buffer and the Vangemert transmit buffer. In
25 the example shown on Slide 22, neither device is sending a flow control

1 signal. Vangemert has data that has exceeded the fill amount. The '454
2 buffer has data that is below the fill amount.

3 Turning to Slide 23, upon -- excuse me. Both equaling the full
4 amount, so the '454 buffer has gotten more full and more full and rises to the
5 level of the fill amount, whatever the predetermined threshold of the '454
6 first buffer is. It will then generate a flow control signal. Similarly,
7 Vangemert, the data has fallen, so it equals the fill amount and then
8 transmits its flow control signal.

9 JUDGE BAER: Why, if you're right up at the cap, you're right up at
10 Vangemert's cap, why would Vangemert send a credit token saying go ahead
11 and send some more data? Wouldn't that then exceed the amount available
12 space? It doesn't make sense to me that, once you hit that fill spot, that you
13 send another signal that says go ahead and transmit because there's room for
14 more data. Can you explain to me or show me where that would be in the
15 reference?

16 MR. BROOKS: Sure. You could look at column 4, effectively
17 paragraph -- or, excuse me. Column 4, lines 24 through, roughly, 50. So I
18 think that --

19 JUDGE BAER: Just a second to get caught up. We're talking about
20 Vangemert, column 4, line 54?

21 MR. BROOKS: 24 through 50.

22 JUDGE BAER: Thanks.

23 MR. BROOKS: So I think it's important here to understand the
24 context of Vangemert and what it is trying to do with its actual point of
25 novelty, which is to ensure that it can send a flow control signal, a buffer
26 credit control word, at the earliest possible moment. So it knows that

1 predetermined fill amount, again, if we return to Slide 21, is generated when
2 the buffer credit manager determines that the committed buffer space, the fill
3 amount, is less than the available buffer capacity by at least one frame of --
4 the size of one data frame. So, yes, it may be right up against the fill
5 amount, but it knows the size of the data words that will be coming in and
6 knows that it can send the buffer credit without exceeding the capacity of the
7 buffer. That is why, as shown here in Slide 23, upon it equaling the fill
8 amount, it will send the buffer credit control word once it is at the fill
9 amount or any point below the fill amount, as long as the size -- the
10 available amount above the predetermined fill amount is sufficient for the
11 size of, is at least equal to the size of one data frame.

12 You could also look at column 4, lines 16 through 23. So the receive
13 buffer -- at the beginning, it says the receive buffer is empty of data frames.
14 The buffer credit manager provided with a negotiated frame size in a receive
15 buffer capacity and is expected to generate, manager, and buffer credits at
16 least equal to the maximum receive buffer capacity divided by the frame
17 size.

18 JUDGE BAER: So I think we're familiar with now the arguments
19 with respect to Vangemert, and I think one of your arguments is, look, even
20 if Vangemert touches that buffer, we still have Copeland, which is a
21 different reference which describes a control word that doesn't,
22 undisputedly, doesn't touch the second buffer. So why don't we move to
23 Copeland's disclosure and Petitioner's arguments about Copeland's
24 disclosure of this control word. In particular, whether Copeland's control
25 word is passed over a serial link is really, I think, the key issue.

26 MR. BROOKS: Understood. So we address that --

1 JUDGE BAER: And I don't mean to cut you off if --

2 MR. BROOKS: Oh, no.

3 JUDGE BAER: If you have to say on Vangemert, you're welcome to
4 say more.

5 MR. BROOKS: No, that is perfectly fine, Your Honor. Excuse me.
6 We discussed this a bit more on our later slides. So Patent Owner originally
7 brought the argument that Copeland does not disclose a serial link. It's, I
8 think, a one-sentence remark in the response and then moved it in the reply
9 to addressing the combination of Copeland and Dobson, but I think it's
10 relevant at either point. The Patent Owner is attempting to read serial link --
11 excuse me, read in several narrowing limitations to the claim serial link,
12 stating you're trying to attempt that it's related to the data connection that
13 carries both the serial data and the flow control signal. It appears that they're
14 asserting that it's only the twisted pairs or the data lines that constitute the
15 serial link. However, the claim itself recites a simple serial link between two
16 devices. This claim was not offered for construction in the Petitioner's
17 initial response, nor was there any leave taken to amend, so we're kind of left
18 with plain and ordinary meaning of the serial link.

19 Copeland, turning to Slide 45, we can see the operation of the
20 Copeland. The flow control operate at 165 is highlighted to the right of
21 Figure 1 as line 165. This is how the flow control operate is generally
22 understood to be generated in Copeland. It is provided to the serial port line
23 buffer, then passes through 53 out through the connector 20. This connector
24 20 also receives all of the data flow from the data -- from the UART 14
25 overlying 28, which is somewhat difficult to see here, the red box. But all
26 the data and the flow control signal pass through the serial port line buffer

1 and then output to the connector and then across the serial link. Copeland
2 notes that it does not show the link to another device but describes it as
3 being connected to perhaps a modem facilitating duplex communication.

4 JUDGE BAER: I don't think opposing counsel would argue that it
5 doesn't go through a serial link connector. I mean, Copeland itself calls it a
6 serial link connector or a serial connector, I think.

7 MR. BROOKS: Yes, serial interface connector.

8 JUDGE BAER: Serial interface connector. My question to you, so
9 the real question is, if you have a bundle of wires and it does serial data
10 transport along with it also has some other pins, is that whole thing called a
11 serial link or is just the wire called the serial link? I understand your
12 position. I think I understand Patent Owner's position. Is there any record
13 evidence of how a person of skill in the art or, more importantly, I think,
14 how a reference describes a serial link? In other words, is the serial link
15 anything that transmits serial data plus other stuff called a serial link, or is it
16 something else? Is it just the serial data lines are called the serial link, where
17 those other wires are called something else?

18 MR. BROOKS: We would argue that it is, again, the actual wire that
19 carries. This -- just give me one moment to find my particular notes on this
20 issue. The '454 patent relies on the disclosure of the '214 patent for which it
21 depends for its support of the serial link. The '214 patent, while describing
22 in some embodiments the twisted duplex lines, offers other options for the
23 serial link. One, it refers to --

24 JUDGE BAER: Take your time. If you could give us an exhibit
25 reference number, and we're now no longer talking about Exhibit 1001.
26 We're talking about the other reference, right? The --

1 MR. BROOKS: That's correct.

2 JUDGE BAER: -- related patents. If you could give us a --

3 MR. BROOKS: So if we look at Exhibit 1010 at lines 39 to 45 as a
4 first example.

5 JUDGE BAER: What column, please?

6 MR. BROOKS: Sorry. Column 8.

7 JUDGE BAER: And the lines again, please.

8 MR. BROOKS: Column 8, lines 39 to 45, describes that ASIC 58
9 communicates the receiver transmitter 106, which provides a physical
10 interface through a terminal connector to cable 4046. Cable 4046 is further
11 referenced in the '214, and I'll find that citation in a moment, as the link.

12 JUDGE BAER: Does it say serial link or link?

13 MR. BROOKS: I believe it says link in the '214.

14 JUDGE BAER: That strikes me as important. I don't think anybody
15 is arguing that it's a link. I think the question is: is it a serial link because it's
16 got parallel aspects to it. But if it says serial link, that would be significant.
17 And, again, that's something you're welcome to address now or address in
18 your rebuttal time.

19 MR. BROOKS: Thank you. So the terminal connector is connected
20 to cable 446 which is interchanged with, again, link, and I can find those
21 exact citations here in a moment.

22 JUDGE BAER: I believe they're called simplex links in the reference.
23 It's column 7, line 26-ish. If there's something else that would be helpful,
24 you're welcome to point to it. But if that's helpful, that's where they're called
25 simplex links.

1 MR. BROOKS: Yes. So they go from cable to simplex link. They're
2 connected to a 20-pin connector, certainly more than four, carrying these
3 high-speed signals. The '214 patent further recites that twin axial lines offer
4 high performance, twisted pairs, or other transmission media may be used.
5 And, again, give me one moment to find that citation. Oh, excuse me. To
6 finish the quote, the transmission distance is not as great and where the bit
7 transfer speed need not to be as high. While a hard-wire connection is
8 illustrated -- excuse me. Where the bit transfer speed need not be as high,
9 while a hard-wire connection is illustrated, a wireless or other type of
10 connection can be employed instead. So it seems that in itself, the '214 is
11 opening the door for various types of serial links to be contemplated for
12 facilitating the communication. And that can be found -- excuse me. The
13 portion I just cited was column 9, lines three -- or excuse me, lines 12
14 through 16.

15 Similarly, Copeland again teaches all data goes through the connector
16 and out through the serial interface. A serial port connector would be, I
17 think, Copeland describes as an RS232 type interface, but it's shown in Slide
18 45. All data, including the flow control data, is transmitted over the
19 connector across the link. The link, as described in the '214, while possibly
20 being these two axial lines. In fact, two axial lines were cited in dependent
21 Claim 5 as an open-ended claim term. Therefore, Claim 1 through claim
22 differentiation much, therefore, include more. However, the '214 is not
23 dispositive on saying that the serial link can be only these two simplex links
24 within the cable.

25 JUDGE BAER: You just used the word simplex, use two simplex
26 links. What does the word simplex mean?

1 MR. BROOKS: The understanding would be, to provide duplex
2 communication, there are two simplex lines. So for devices that are both
3 sending and transmitting, it would seem that two simplex links would have
4 one line that provides data to the other device and one line that receives data
5 from that device.

6 JUDGE BAER: Right. So you just described sending data over a
7 simplex link. Is the RS232 connector actually a simplex link or a duplex
8 link, and does that inform whether it is a serial link or not?

9 MR. BROOKS: RS232 is a duplex link.

10 JUDGE BAER: So it's a duplex link, not a --

11 MR. BROOKS: But it includes simplex links within it. So the link
12 described in the '214 is a duplex link. As they show in their one
13 embodiment of their connector, it contains two simplex links shown as two
14 twisted pair. RS232, similarly, includes simplex links, as well as other
15 control signals, but it's all transmitted over the serial link. So in RS232,
16 there's a serial link between device A and device B to facilitate serial
17 communication between those devices. Similarly, in the '214 patent, there's
18 a serial link that includes two simplex links, as well as other potential signals
19 on their cable, that go between A and B.

20 JUDGE BAER: Thank you.

21 MR. BROOKS: Touching briefly on the Copeland Dobson
22 combination, as we return to Slide 40, Copeland teaches generating a flow
23 control signal response to the amount of data being stored equaling or
24 exceeding the fill amount. This does not particularly seem to be issue.

25 In their reply or, excuse me, the Patent Owner response, as noted in
26 Slide 42, Petitioner appears to map Dobson's IRQ signal to the flow control

1 signal and states that that is not transmitted through the serial link.
2 Petitioner only mentioned the IRQ signal with respect to Dobson in its
3 petition to show that Dobson, a complementary patent to Copeland, indeed
4 operated using flow control. However, Copeland was expressly used to
5 teach the element of transmitting the flow control to the second device.

6 JUDGE BAER: So you're not disputing that Dobson's flow control
7 signal is sent not over a serial link.

8 MR. BROOKS: That's correct. And we never attempted to assert that
9 it did.

10 JUDGE BAER: And why is Dobson different? So I'm looking at
11 figure -- at the figure of Dobson that has two links in it, which is -- give me a
12 minute, unless you know the figure I'm talking about. Yes, it's Figure 4 of
13 Dobson. And you see there to the top left we have 136, item number 136
14 and item number 8. It's my understanding that item number 136 is that flow
15 control signal and 8 -- excuse me. 136 is the data and 8 is the flow control
16 signal going over a non-serial link. Why is that not -- you're not disputing
17 that Dobson doesn't have its flow control signal going over a serial link.
18 Why is Dobson's disclosure any different than Vangemert's, which has the
19 same sort of two lines but perhaps in one cable? Is it just because Dobson
20 doesn't disclose it as one cable?

21 MR. BROOKS: Dobson operates a little differently. Dobson is more
22 directed to sending the flow control signal back to the host device is where it
23 describes most of its flow control. So it's connected to device A, instead of
24 as the host, right. So it's getting this parallel data from a host device, say a
25 computer or a modem. It's then doing the processing to send the data out
26 over a serial communication link. Its flow control, the IRQ signal in

1 particular, is used to tell the host device that, hey, we need to stop and don't
2 transmit anymore. That's why, while it does look to perform flow control, it
3 doesn't do it in the same way that Copeland does. Copeland is responsible
4 for communicating with the other device, the remote node, to say, hey,
5 you're no longer allowed to send data.

6 JUDGE BAER: I see. So it's over a serial link but not the serial link,
7 something like that. Does that make sense? Not the same serial link that
8 we've been talking about the entire --

9 MR. BROOKS: Correct. Dobson would be different than that.

10 JUDGE BAER: Thank you. That's helpful.

11 MR. BROOKS: These are all --

12 JUDGE BAER: If you could go back to a definition of a serial link
13 here and how, how -- which wires that serial link meets. Is it your position, I
14 know there's no claim construction briefing on this, but is it your position
15 that any cable that carries serial data, no matter how many other signals it
16 also carries, as long as the data part is a serial data cable, that is a serial link?
17 Would that be, roughly, your construction?

18 MR. BROOKS: Yes, Your Honor. I believe a person having ordinary
19 skill in the art would understand that, particularly with reference to the
20 RS232, which is maybe the better reference with respect to the '214, it's a
21 point-to-point communication link between device A and device B. And it
22 is a serial communication link between device A and device B.

23 JUDGE BAER: Does that standard, the RS232, does that ever call the
24 -- I know it calls the interface a serial interface. Does it ever call the link a
25 serial link? I'm assuming you would have pointed it out if it did, but, if I've
26 missed that, I would like to know.

1 MR. BROOKS: The -- I will admit that, if it is in the standard, I have
2 not read the standard in detail as to how it may refer to it, other than we do
3 know that in the Copeland reference it refers to RS232 being a serial
4 interface between the devices, I believe.

5 JUDGE BAER: It's certainly called a serial interface.

6 MR. BROOKS: Yes.

7 JUDGE BAER: It's just a question of whether that same standard
8 uses the term link instead of interface at any point. I understand that
9 Copeland doesn't show the sort of line, but I was just curious if it referred to
10 that line anywhere in any really of the exhibits that you have sent or have
11 submitted rather.

12 MR. BROOKS: No. Unfortunately, Copeland tends to end at that
13 point. But, again, it does discuss that it is a connector, an RS232 type link
14 or, excuse me, connection is made between the two devices. One in skill in
15 the art would understand that it communicates serial data over a single wire
16 and would, therefore, be a serial link, at least from a plain and ordinary
17 meaning standpoint.

18 I would like to go back briefly to the arguments made by Dr.
19 Grimsrud. Just a moment while I get my device up to the right claims, or
20 slides. Particularly, the arguments made in Slides 10 through 18. These
21 positions are -- stand unrebutted by Patent Owner, other than by attorney
22 argument. Dr. Grimsrud was never deposed in this matter, and no expert
23 testimony was proffered or, nor was any leave taken or asked for to submit
24 additional evidence.

25 Further, with respect to, excuse me, Slides 20 through 25, so,
26 effectively, with the flow control signal generation argument, I'd like to

1 point out that the Patent Owner tends to say that he was teaching this -- the
2 limits. Again, this seems to be new claim construction that was presented for
3 the first time in the surreply.

4 Finally, with respect to the combination of Vangemert and Copeland,
5 turning to Slide 29, it's Petitioner's belief and cited position that Vangemert
6 teaches everything in Claim 1, other than, potentially, the connector, which
7 is clearly taught by Copeland. However, we did offer a potential
8 combination or substitution for one flow control signal protocol, such as the
9 one in Copeland, with Vangemert. Patent Owner -- again, we're referring to
10 Slide 29 -- at first, said that there was no motivation to combine these two
11 different flow controls. I'd first like to -- this is in contrast to the testimony
12 provided by Dr. Caloyannides. And I've got to find my proper cites here.
13 Dr. Caloyannides, in his exhibit, as well as in the petition at -- excuse me
14 one moment. Excuse me, Your Honor. Effectively, in the petition, we argue
15 both the substitution and the combination. Patent Owner argued over the
16 combination, saying that it would not be proper to have -- use multiple types
17 of flow control signals in one system. We'd like to point the Court to Patent
18 Owner's Exhibit 2008, which is an exhibit relating to Network World, which
19 is discussing the group's determination of flow control mechanisms within a
20 new asynchronous transfer mode. In it, and I quote, Ken Brinkhoff, a
21 spokesman for the Flow Control Consortium, said devices could be built to
22 support both flow control schemes and long-term the market would then
23 decide. So it is known to potentially put two different flow control schemes
24 in one single system.

1 Additionally, Petitioner put forth that Copeland could be substituted
2 for Vangemert, the flow control could be substituted, and the substitution
3 was not rebutted by Patent Owner, only the combination thereof.

4 JUDGE BAER: If we could just talk a little bit about -- I saw two
5 combinations in your petition. One is Vangemert's, I'm going to call it --
6 excuse me -- Copeland's. I'm going to call it a hardware control. Do you
7 understand what I mean when I say hardware control? It's not in the data
8 word itself, like in Vangemert?

9 MR. BROOKS: Yes, Your Honor.

10 JUDGE BAER: So Copeland's hardware control and Vangemert's
11 software control. I understood one of your combinations to be replacing
12 Vangemert's software control with Copeland's hardware control and one of
13 your combinations to be adding them together where you produce flow
14 control with both software and hardware. Is there anything I'm missing
15 about your combination where there's some sort of in between that you were
16 suggesting? And if so, was that in your papers, or is it just a wholesale
17 adding of all the pieces of Copeland that it would take to include that
18 hardware control? In other words, how much of Copeland are you bringing
19 over into Vangemert in your combination?

20 MR. BROOKS: Well, I think, in the first level, the petition talk about
21 we could bring in, say, perhaps with the generating, right, it would be
22 potential to not require a hardware flow control of Copeland wholesale. One
23 could take --

24 JUDGE BAER: Let me cut to the chase. Did you suggest a
25 combination in which you used just the concept of exceeding a threshold in

1 Copeland but do that in Vangemert's software control? And if so, where is
2 that in your petition?

3 MR. BROOKS: I will save that for rebuttal, Your Honor.

4 JUDGE BAER: So my question clear?

5 MR. BROOKS: Yes, Your Honor. Do Your Honors have any
6 additional questions?

7 JUDGE BAER: We don't. If you'd like to reserve the remainder of
8 your time, we'll go ahead and give you 20 minutes on rebuttal. I think we
9 have a number of things to address, so that might be helpful.

10 MR. BROOKS: Yes. Thank you, Your Honor.

11 JUDGE BAER: Thank you. Mr. Theiss, correct?

12 MR. THEISS: Yes.

13 JUDGE BAER: Mr. Theiss, whenever you're ready. How much time
14 would you like to reserve?

15 MR. THEISS: I'd like to reserve 15 minutes, Your Honor.

16 JUDGE BAER: Could you say again, please?

17 MR. THEISS: Fifteen, please.

18 JUDGE BAER: Great. Before you start --

19 MR. THEISS: Your Honor, can I have one minute to just step outside
20 and get a drink of water?

21 JUDGE BAER: Take your time. We'll take a five-minute recess.

22 We'll go off the record. Thanks.

23 (Recess)

24 JUDGE BAER: We are back on the record. Mr. Theiss, you have 45
25 minutes on the clock. Whenever you're ready.

1 MR. THEISS: Thank you, Your Honor. I'd like to first start with
2 what the petition alleged with regard to Element K. I'm referring to Slide 2.
3 As Your Honor addressed when you asked the question of Petitioner
4 whether it was clear that the Vangemert reference doesn't meet this
5 limitation, and we agree, Your Honor, that it's clear that, and everyone
6 agrees, that the way Vangemert works is, before anyone can transmit, there
7 has to be a buffer credit control word allocated.

8 Your Honor asked Petitioner's counsel about where in the reference
9 does it teach anything that happens when the value was equal. I'm going to
10 direct you to Slide 21 of Petitioner's slide deck. Petitioner's counsel read
11 from their second bullet points, and I'll read it again. The buffer credit
12 manager 418 generates a credit upon determining that the committed buffer
13 space fill amount is less than the available capacity by at least the size of one
14 data frame. The credit is then packaged into a buffer credit control word by
15 the transmit controller, emphasizing the word less.

16 JUDGE BAER: But that's Petitioner's characterization of it, and their
17 point is, look, you didn't bring this point up until your surreply, so we never
18 had a shot. So I'm less curious about Petitioner's characterization rather
19 Vangemert's characterization of it. What happens when they are at precisely
20 that equal point?

21 MR. THEISS: Well, Your Honor, I think Petitioner's Slide 22 is
22 demonstrative of Petitioner's misapprehension of what is actually taught in
23 Vangemert. You'll see on the figure, which was not included in any of the
24 papers, you'll see a circumstance that is physically impossible in Vangemert.
25 Vangemert, as I said, you can only transmit when the buffer control manager
26 has allocated you a buffer credit control word. Therefore, buffer overflow is

1 not possible. In Vangemert, you cannot have the figure shown in blue and
2 red on the right-hand side of the figure. You cannot have a credit control
3 word that is issued that will cause the buffer credit -- the buffer to overflow
4 because credits are only issued when there is available buffer space for that
5 frame. And we expend -- we discuss that extensively in our Patent Owner
6 response.

7 Specifically, where I think the dispute is, and I think it's really critical,
8 is the actual claim language, as you can see on Slide 2 of ours. The claim
9 says the module is operable to generate a flow control signal in response to
10 the amount of data stored in the first buffer equaling or exceeding the fill
11 amount. That's what the claim says.

12 Now, if we look at what Petitioner mapped in Element K, it says the
13 bit credit control signal was generated weighing available buffer space is
14 sufficient, equal to the fill amount, to accept the data word to transmit. And
15 the emphasis is highlighted there. Specifically, there is no attempt by
16 Petitioner to capture the in response to or anything related to what was
17 shown in Slide 22 or 23, as we just discussed.

18 Specifically, as it relates to the in response to, the first time that the in
19 response to appears is in Petitioner's reply, moving to Slide 3. And as
20 highlighted in the motion to strike, expert explained allegedly the in
21 response to language. But as we highlighted in our reply to the motion to
22 strike, it is not our job to go through and play archeologist to the record.
23 PTAB's rules are very clear on incorporation. If it's not in the paper, it's not
24 being argued.

1 The petition did not argue the in response to language. Therefore, we
2 didn't respond to it since it was so clear on its face that Copeland teaches a
3 situation whereby it is not possible for the claim limitation to be met.

4 JUDGE BAER: I think you mean Vangemert.

5 MR. THEISS: I'm sorry. Vangemert. I misspoke. Thank you. And
6 that issue of when and what is the triggering event is particularly critical, we
7 highlight on Slide 5, because, as Your Honors noted in your questioning, is
8 that in Vangemert control words are made available, credit control words are
9 made available when there is space. There is no teaching in Vangemert of
10 any sort of control signal or anything that is sent or discussed or any sort of
11 control concept that is sent when it is equal to or exceeding, which is the
12 exact claim language.

13 So our position is that Petitioner never met their burden of showing
14 how this element was met. We explain how the technology fundamentally
15 cannot meet the claim limitation. And therefore, there was not any sort of
16 waiver that was given. We explained how the technology could not meet the
17 claim limitation. Petitioner did not argue it met the claim limitation, and we
18 responded to the in response to language that was added by Petitioner in the
19 reply and we addressed it in the surreply pursuant to the rules.

20 I would then like to move to the Tachyon reference and note, as
21 shown on Slide 6, that Tachyon is not one of the grounds for our proceeding
22 today. It's not proposed at the time of the petition --

23 JUDGE BAER: Counsel, if we could focus on the dispute. No one is
24 going to argue that it was in the grounds, and no one is going to argue that
25 they can bring it in as an additional reference. The entire question is

1 whether Tachyon is used to describe what Vangemert is doing, not what
2 Tachyon describes in and of itself.

3 So if we could stick to that issue, rather than -- assume we agree with
4 you that Tachyon can't come in as an independent reference without
5 Vangemert's teaching. I assume you disagree with opposing counsel's
6 characterization that Tachyon is describing what Vangemert is doing; and if
7 you could point us to something in Tachyon that says this is one way to do it
8 but there are other ways to do it, for example, that would be helpful because
9 opposing counsel has said, no, this is a standard and this is a standard that
10 Vangemert applies. So that would be helpful, that discussion.

11 MR. THEISS: Yes, Your Honor. So I will probably give you exact
12 citations in my rebuttal period time. But to talk about where the Tachyon
13 reference comes from, it is from a general journal from HP that was
14 discussing implementations of fiber channel. The Tachyon reference is
15 specifically a board, a module, that can support fiber channel. It is not
16 describing the standard. It is one particular vendor, one particular inventor,
17 one particular guise, way that he was proposing to implement fiber channel.

18 JUDGE BAER: And I understand your characterization. If you could
19 just point us, in rebuttal is fine, if you could point us to that text, it would be
20 helpful.

21 MR. THEISS: Absolutely. Absolutely, Your Honor. Specifically,
22 when we go into the details of what Tachyon is talking about as it relates to
23 the act signal. Notice that we talk about Vangemert, we're talking about the
24 transmitter getting permission before they transmit the information. Well,
25 Your Honor, as we explained in the surreply, an act is afterwards. It's a
26 confirmation that something was said. Reading exactly from our brief, an

1 act is an acknowledgment that is sent after a previous transmission was
2 received that confirms receipt.

3 So in one case, you have something that is happening before, which is
4 what is taught in Vangemert, and then you have this Tachyon reference
5 that's talking about acts that are sent afterwards. These are just two
6 fundamentally different sets of control.

7 And I think the prosecution history is very helpful in this regard. The
8 base reference that was citing Szatkowski -- I apologize for the
9 mispronunciation of the inventor's name -- use an acknowledgment system
10 that used acts that are very similar to what is being described in Tachyon.
11 And the examiner said, no, that doesn't teach what is going on here because
12 our invention is different.

13 JUDGE BAER: I don't understand why post, sort of the different
14 authorization times would affect whether the control word -- we're talking
15 about whether that control word hits that buffer, right? Why does it matter
16 that one is a preauthorization and one is a sort of overflow alarm? Why does
17 that difference matter to whether the control word would hit that buffer?
18 Why is that distinction important?

19 MR. THEISS: Well, Your Honor, as it goes into Petitioner's
20 hypothetical of the deadlock, which isn't discussed anywhere, it's a
21 consideration that one would have in such a system as it relates to deadlock,
22 which relates to the acknowledgments, because the acknowledgments would
23 be left open if it couldn't transmit. But, again, deadlock isn't mentioned
24 anywhere in Vangemert, it's not mentioned anywhere in any of the cited
25 papers.

1 But the difference in the architectures are important here, Your Honor.
2 We have what Vangemert actually says, and Vangemert's improvement in
3 using these buffer credit control words to control who can talk when. And
4 then we have additional references that are not in the record that are talking
5 about implementations that call for additional solutions to controlling who
6 can talk when. They're just different.

7 JUDGE BAER: If we could turn to that disclosure in column 4, line
8 14 through 16, of Vangemert.

9 MR. THEISS: Yes. Just give me one second to advance that slide.

10 JUDGE BAER: Sure.

11 MR. THEISS: Just give me one second. Hang on for one second,
12 Your Honor.

13 JUDGE BAER: Please.

14 MR. THEISS: Oh, there we go. It is on Slide 9. I apologize.

15 JUDGE BAER: So column 4, line 13, says the buffer credit control
16 manager is enabled, the transmit controller begins transmitting buffer credit
17 control words in response to a credit signal from the buffer credit manager.
18 That describes an enabling followed by a transmitting. It doesn't say
19 anything in between about sending it down to a buffer.

20 I understand your point that there's no inherent disclosure. I
21 understand Petitioner's position to be this is an express disclosure. It says
22 step A and step B, and it would be silly to impose an illogical step in
23 between. My question for you is why is this disclosure at column 4, lines 13
24 through 16, not an affirmative disclosure of sending a control word out the
25 transmission line without hitting that buffer?

1 MR. THEISS: Because every other teaching in the Vangemert
2 reference teaches that the control words are sent via the buffer.

3 JUDGE BAER: But those are different control words. Those are data
4 control words; isn't that correct?

5 MR. THEISS: I am unaware of any teaching in Vangemert that
6 makes a distinction between them. I think, if anything, it's a matter of
7 sloppy patent drafting. The only control words that are taught on how
8 they're transmitted are with regard to being retrieved from buffer 410.

9 JUDGE BAER: So it's your understanding that that disclosure that
10 you pointed to in your briefs, which is column 3, line 49, when it says a
11 transmit controller receives control words and data frames from transmit
12 buffer and forwards them to encoder, that means credit control words, not
13 data control words?

14 MR. THEISS: We're of the position, we -- Vangemert does not make
15 a distinction between the two. There's not a teaching in Vangemert that says
16 that we're going to handle data control words one way, buffer credit control
17 words another way.

18 JUDGE BAER: Is there any recognition in Vangemert of those two
19 things existing at all? In other words, I know Vangemert uses the word
20 credit control words. Does it ever use any other kind of control words, or
21 are the only kind of control words generic control words and credit control
22 words?

23 MR. THEISS: I would have to check the record, Your Honor, but my
24 recollection is that control words are only here and buffer credit control
25 words are the only ones that are used. But I would have to confirm the
26 record.

1 JUDGE BAER: And your position would be those are synonyms; is
2 that correct?

3 MR. THEISS: Yes, Your Honor. And, further, we would highlight
4 that it's Petitioner's burden to lay out that they are different. It is not our
5 burden to prove that they are the same because it is Petitioner's burden,
6 particularly as highlighted as we see on the slide on Slide 10, if the trier of
7 fact of the issues is left uncertain, the party with the burden loses. And that
8 is the case here. The Petitioner has the burden of showing that they're
9 different because the patent shows clearly the control words are sent via the
10 buffer 410, as there's an express control there.

11 JUDGE BAER: So your position would be that column 4 is
12 describing part of the transmission but not all of it; is that correct?

13 MR. THEISS: I think column 4 is providing the general architecture
14 and is not going into a level of granularity about how the machinations and
15 the blocking and the tackling of the transmission work. In most
16 communication systems, prior to transmission, there is going to be some sort
17 of a buffer. That's entirely what the buffer credit control words are for is
18 recognizing this fact that in all communication systems there needs to be a
19 holding point.

20 And as we highlight on Slide 11, Petitioner has not made any effort to
21 show that Vangemert teaches that they're different. And, again, it is
22 Petitioner's burden, it is not ours.

23 So Petitioner has attempted to fill the gaps in Vangemert through their
24 expert testimony alone, specifically as it relates to the existence of a FIFO
25 buffer. There is nothing in Vangemert that says that any of the buffers are
26 FIFO.

1 Petitioner expert predicates their conclusions on the fact that the
2 buffers are FIFO. As we discussed in our briefing, there's lots of other types
3 of buffers that could potentially be implemented, addressable buffers,
4 priority-based buffers, that could have been implemented. However,
5 Vangemert is silent as to this issue.

6 As the Fed Circuit has pointed out, experts' conclusory statements and
7 unspecific expert testimony do not qualify as substantial evidence that can
8 support the Board's conclusion regarding obviousness. So all of the leaps
9 that are predicated on Vangemert being FIFO are not supported by anything
10 other than Petitioner's expert's testimony. Specifically, looking at Slide 8 of
11 Petitioner's, from Petitioner's slide deck, Doctor -- their expert -- I'm sorry,
12 I'm not going to mispronounce his name -- testified that a POSITA would
13 understand that the buffer credit control word in Vangemert is not passed
14 through the transmit buffer. There's no support for that, and that was exactly
15 the case in *Xerox v. Bytemark*, the decision of the PTAB that was marked
16 precedential by Director Vidal. Specifically, that holds that the cited
17 declaration testimony is conclusory and unsupported and, therefore, is
18 entitled to little weight. We have the expert going on blind faith that a
19 POSITA would understand that the credit control word of Vangemert is not
20 passed through the transmit buffer. There is nothing in Vangemert, there is
21 nothing in the intrinsic record, there is nothing in the extrinsic record that
22 holds for that proposition. The only thing we have is unsubstantiated expert
23 testimony.

24 JUDGE AHMED: Counsel, what about the reason? There's a good
25 reason for it, right, that you want to reduce data transmission latency, and it's
26 in line with the Vangemert's goals. Why is that not enough?

1 MR. THEISS: Well, Your Honor, because there is a large number of
2 ways that you can avoid the data latency. As we're highlighting on Slide 14,
3 quoting the surreply at page 15, it could be implemented in an addressable
4 buffer, a random access memory, a priority queue. And the problems that
5 their expert is highlighting only happen if you have a very, very large FIFO
6 buffer.

7 Again, these are not addressed in the record. We're not standing here
8 trying to redesign Vangemert as not persons of ordinary skill in the art at the
9 time of this IPR. The petition is supposed to stand on its own and lay out
10 these issues.

11 And if we look at, jumping to our next slide -- let me just reiterate.
12 There is nothing in Vangemert that says that it is inherently FIFO.
13 Vangemert is entirely silent as to the issue.

14 Moving to the proposed combination with Copeland, I would just like
15 to note that, in the reply, Petitioner cites to the MPEP section for IDS as
16 being relevant to whether or not references are cumulative. I'm not sure of
17 the placement here, but, again, going back to why the case was allowed, the
18 argumentation that the applicant, the Patent Owner, got this allowed case
19 and the examiner had rejected based on dings, which is usually a flow
20 control mechanism comprising level indicators for the input buffers for
21 indicating the amount of data stored in a buffer and a flow control device for
22 monitoring the level indicators to determine if the amount of data in the
23 input buffer crosses the first threshold. Exactly what Copeland does.

24 Petitioner stood before you and discussed that they're only relying
25 upon Copeland for the teaching of a connector. We don't think this is
26 entirely fair. If you look at the statements made by the applicant in the prior

1 office action prior to the notice of allowance, the applicant made, roughly,
2 40 pages of argumentation. One argument said a connector is not inherently
3 part of a serial link. We are all in agreement, as shown by the RS232
4 standard, that RS232 connectors could be used with serial connectors.
5 They're almost synonymous. Clearly, the examiner allowed the case for
6 something other than the proposition that serial ports have serial connectors.

7 So we get into the real motivation to combine of Vangemert and
8 Copeland. So Vangemert teaches a system by which you cannot possibly
9 have a buffer overflow because the only time that you can transmit is if you
10 have permission. So if there's space below the threshold, you can get a
11 buffer credit control word. And then you have Copeland which teaches that
12 you've set a signal, the RTS signal, when you have exceeded a threshold.
13 Combining these two would actually have the reverse effect of decreasing
14 the latency, which Your Honor had asked me about, by putting them
15 together because now we have to deal with two separate systems.

16 JUDGE BAER: Okay. Assume you're right that putting the two,
17 gluing the two systems together and doing both software control through
18 Vangemert's system and a hardware control more practically through
19 Copeland's system is a problem. That doesn't do anything to using
20 Copeland's control method in Vangemert. Why is that a problem? Does
21 Vangemert somehow teach away from using hardware control? What's
22 incompatible about Copeland's control in Vangemert, assuming we're not
23 also using Vangemert's control, which Petitioner was pretty explicit about
24 that as one of two combinations that they're proposing.

25 MR. THEISS: Yes, Your Honor. To first address the hardware
26 versus software issue, the physical hardware type control with the RTS and

1 the CTS signals that are taught are physically incompatible with fiber
2 channel. In our POR, we go into a bit of briefing as to the voltage levels and
3 things of that nature where in RS232 at specifically levels.

4 But to address your specific question of why can't we take this
5 concept of using the buffer overflow signal that's set in Copeland, why can't
6 we bolt that into the buffer credit control system that is taught in Vangemert,
7 and, Your Honor, that is because it would completely defeat the entire
8 purpose of Vangemert, which was the buffer credit control words. It would
9 be a complete impermissible redesign to take a system that is designed to
10 increase the efficiency of the transmission system by prohibiting buffer
11 overflows to now taking completely different system that only operates
12 when you have an overflow. It just would be a complete impermissible
13 redesign.

14 And, effectively, what would happen if you bodily combine the two,
15 as is proposed in the petition, is that you would end up in a circumstance
16 where you potentially could have a red signal and a green signal both saying
17 go and stop, where there's a buffer credit control word that was allocated but
18 you're over the 40 percent that is taught in Copeland, so what do you do?

19 So moving to the proposed combination with Dobson, Your Honor,
20 you talked with Petitioner's counsel quite a bit about this figure. We had
21 originally looked at the IRQ because we were under the impression that we
22 now are in agreement that the flow control signal that is taught in Dobson
23 does not leave the Board. It's not --

24 JUDGE BAER: Excuse me. Slide 19.

25 MR. THEISS: Slide 19, yes, Your Honor. Slide 19. We're in
26 agreement now that the flow control signal taught in Dobson does not leave,

1 and that's why we looked at the IRQ because it physically leaves the device
2 because, specifically, the patent requires that the data go over the serial link,
3 as well as the flow control signal through the serial link and the connector.

4 But now, as we understand it, this is an explanation of how RS232
5 works specifically. Your Honor had asked questions about what is taught
6 related to the hardware handshaking versus the data signal. We would like
7 to further explain, as explained in the patent itself, is that a duplex
8 connection signal is formed by two simplexes connected to each other.
9 Specifically, in RS232, which is called out, it's the transmit and the receive
10 lines. Those are the only two wires where data is transmitted.

11 JUDGE MCSHANE: Counsel, this is Judge McShane. Sorry to
12 interrupt. Are you on Slide 20 now?

13 MR. THEISS: Yes, I'm on Slide 20 now. Yes, Your Honor.
14 Specifically, in Copeland, it discusses the clear to send and the ready-to-send
15 signal. I'm sorry. The request to send, so request to send is pin 7 in DB9.
16 Clear to send is pin 8 in the DB9, and it corresponds to similar channels in
17 the DB25.

18 JUDGE BAER: But, counsel, this connector, this device connector,
19 it's called a serial device interface, right? A serial interface, is it not?

20 MR. THEISS: Yes, Your Honor.

21 JUDGE BAER: Doesn't that show that a serial interface contemplates
22 that we're sending serial data, even if it has other pins?

23 MR. THEISS: Well, no, Your Honor. I believe that the claim makes
24 it quite clear that there's a distinction between the serial connector and the
25 serial link.

1 JUDGE BAER: I think you do have claims that make that clear. I'm
2 just not sure they're challenged here, and I'd like to ask you about that.
3 Claim 10 and Claim 18 say explicitly what you want it to say, which is that
4 you're going to send the data flow control signal over the same line, over the
5 data line. If you could give me a little background. I assume there's a
6 parallel litigation; is that true?

7 MR. THEISS: Yes, Your Honor.

8 JUDGE BAER: Were Claims 10 and 18 at issue in that case?

9 MR. THEISS: I don't know off the top of my head, Your Honor.

10 JUDGE BAER: And so you don't know whether 10 or 18 are
11 asserted?

12 MR. THEISS: They're separate litigation counsel.

13 JUDGE BAER: Fair enough. So isn't the fact that Claims 10 and 18
14 claim explicitly what you are sort of articulating you want Claim 1 to be?
15 Isn't that evidence that Claim 1 is broader by sort of the doctrine of claim
16 differentiation? I know we don't have a claim construction dispute here.
17 Nonetheless, that strikes me as informative. Can you respond to that?

18 MR. THEISS: Yes, Your Honor. And I think we really need to drill
19 into that last wherein clause. It says transmit the flow control signal through
20 the serial link and the connector. Under Your Honor's proposed
21 construction, we'd be reading the connector out. There would be no reason
22 for the connector to be there. That word would have no meaning.

23 JUDGE BAER: I understand there needs to be a connector and a link.
24 The question is whether that link can include multiple lines.

25 MR. THEISS: Yes, Your Honor.

1 JUDGE BAER: Is it your position that it stops being a serial link
2 when it controls multiple lines, or is it, no, that connector has a serial line
3 and parallel lines, as well?

4 MR. THEISS: The latter, Your Honor. It's that in the RC32 standard,
5 there are signals and there are data. And Copeland itself makes that
6 distinction.

7 JUDGE BAER: It just strikes me, when I was talking about the
8 connector, what I was saying is that, in the prior art, the prior art seems to
9 refer to some things as serial things that include parallel elements. So my
10 point is not that it doesn't have to pass through this connector but just that
11 the prior art refers to serial things as serial things carry serial data and have
12 parallel elements. Now, if I'm wrong about that, that the prior art calls it
13 something different, I would like to know. But if not, if you could respond
14 to that.

15 MR. THEISS: Yes, Your Honor. I would like to direct you to
16 column 3 of Copeland. Column 3, roughly, lines 13.

17 JUDGE BAER: Okay.

18 MR. THEISS: The present invention, while providing for automatic
19 flow control, also allows the host computer to directly de-assert the DTR
20 and/or RTS signals and signal the remote transmitter to stop sending. Then
21 going to the end of that paragraph, the end of that section, starting on line
22 29, it is a further object of the present invention to provide for automatic
23 flow control while allowing the host computer to signal the remote
24 transmitter to stop sending data. So there is a distinction that Copeland is
25 saying between the signals, which are sent on the RTS and CTS line, which
26 is consistent with the terms being used in the standard, and the data that is

1 sent over the RTX and TXD lines, which is the receive and transmit, those
2 two simplex links that form the duplex link where the data is sent.

3 JUDGE BAER: Do you disagree with my characterization of
4 dependent Claim 10 as explicitly claiming control signal in the data line?

5 MR. THEISS: No, Your Honor.

6 JUDGE BAER: Okay. And you would agree that Claim 1 does not
7 make that same explicit distinction?

8 MR. THEISS: That is correct, Your Honor. It is making it explicit as
9 to where the data is being sent; yes, Your Honor.

10 JUDGE BAER: So am I correct that, under your proposed, we'll call
11 it construction, or the way you're reading the claims, Claim 1 and Claim 10
12 would have the same scope and there would be no difference; is that true?

13 MR. THEISS: I would like to take a moment to address that on the
14 rebuttal portion, but I think there's a subtle nuance that I'm unable to explain
15 to you that's clear in my mind, but I need a couple of minutes to formulate
16 my response to that.

17 JUDGE BAER: That's fine. Thank you.

18 MR. THEISS: So without any other questions, Your Honor, I'm
19 willing to answer any questions you have.

20 JUDGE BAER: Give us just a minute, if you would, please.

21 MR. THEISS: Yes.

22 JUDGE BAER: If we could talk a little bit about the combination. I
23 asked opposing counsel what's wrong or did you propose a combination in
24 which you are using Copeland's trigger mechanism with Vangemert's
25 software configuration. In other words, instead of giving tokens ahead of

1 time to say there's room to use an overflow case but in data, not in a separate
2 line. What's wrong with that combination?

3 MR. THEISS: We don't believe it's argued and briefed.

4 JUDGE BAER: Is that the only thing that your argument is missing?
5 You would say, if that were argued in the brief, we would concede our case,
6 but it's not?

7 MR. THEISS: Absolutely not, Your Honor.

8 JUDGE BAER: Okay. If so, what's wrong with it? I obviously am
9 not asking you to concede your case, but if you would articulate for me
10 substantive problems with that argument other than just they didn't make it.

11 MR. THEISS: Well, Your Honor, we have the issue of how that
12 would work in fiber channel. Fiber channel, which is what Vangemert is
13 entirely about, is how would you adapt fiber channel that needs this control
14 governor saying who can transmit when, how could you adapt that to handle
15 the situation where it's a willy-nilly, there is no control, and you're looking
16 for someone to assert and de-assert. Particularly, as it relates to RS232,
17 which is the concept that is talked about in Copeland, we're talking point to
18 point, one to one. Fiber channel is entirely predicated on the idea of having
19 a ring network or other architectures where there's one to many type
20 communication.

21 JUDGE BAER: Vangemert has a fiber channel, correct?

22 MR. THEISS: Yes.

23 JUDGE BAER: And that's a one-to-many configuration.

24 MR. THEISS: Yes.

25 JUDGE BAER: Can you just articulate what that means --

1 MR. THEISS: Meaning that there's a shared channel among multiple
2 things, printer, storage devices, wherein RS232 it is a single DTE to DCE
3 device, two devices connected over a wire. The transmit and receiver
4 flipped on each other, so there's transmit on ones, the receive on the other.
5 So it's a one-to-one type communication.

6 That works and you can use these analog switching mechanisms
7 because you know who is asserting and who is de-asserting because you're
8 only connected to one thing. When you go into a more complicated
9 architecture, like it's talking fiber channel, you have the circumstance where
10 I can say stop because my buffer is full but your buffer is fine, I don't know
11 who is transmitting to whom, you need a more complicated control
12 mechanism, which is more than just a matter of swapping one in and
13 swapping the other one out.

14 JUDGE BAER: Thank you. With that, I don't have any further
15 questions. Let me check in with the rest of the panel. Any further questions
16 at this point? Great. Then we will put an extra 13 minutes --

17 JUDGE MCSHANE: No questions. Thank you.

18 MR. THEISS: Thank you.

19 JUDGE BAER: Put an extra 13 minutes on the clock, so you'll have -
20 - you said 15, so 28. Petitioner, whenever you're ready, we're going to put
21 20 minutes on the clock. Give us just a minute.

22 MR. TREMBATH: Could I have a mentoring moment, a couple of
23 minutes?

24 JUDGE BAER: You want some time off the record?

25 MR. TREMBATH: Yes.

1 JUDGE BAER: Yes. We'll take two minutes off the record. Go
2 ahead.

3 (Recess)

4 JUDGE BAER: Mr. Brooks, we've put 20 minutes on the clock.
5 There's no hurry. Begin whenever you're ready.

6 MR. BROOKS: Thank you, Your Honor. Thank you. So to discuss
7 some of the questions that came up from the previous presentation, one, I
8 believe you had asked whether Tachyon refers to being an implementation
9 of the fiber channel standard. Page one of the article specifically recites --

10 JUDGE BAER: Could you give me a reference to the article? What
11 exhibit number is it, please?

12 MR. BROOKS: Tachyon is Exhibit --

13 JUDGE BAER: 1014 maybe?

14 MR. BROOKS: Yes, 1014.

15 JUDGE BAER: Thank you.

16 MR. BROOKS: I apologize. It's hard to switch back and forth here.
17 And this would be actually page 97 of the exhibit, page 1 of the article. And
18 in the heading, it is stated that the Tachyon implements the FC1 and FC2
19 layers of the five-layer fiber channel standard, which I think show that fiber
20 channel is instructive on how the fiber channel -- excuse me. Tachyon is
21 instructive on how the fiber channel protocol operates.

22 Further, Mr. Lee at paragraph 99, Exhibit 2002, appears to concede
23 this point, stating that fiber channel is indeed a standard.

24 The other question outstanding was whether the petition taught
25 substitution, as well as combination, of Copeland with Vangemert, and this

1 is recited in the petition at pages 29 and 30, saying that it could be combined
2 or the flow control mechanism of Copeland could be substituted.

3 JUDGE BAER: Great. And I would like to hit on that second point a
4 little bit. The question is, in that substitution, how much of Copeland are
5 you bringing into Vangemert? Does my question make sense?

6 MR. BROOKS: Yes, Your Honor. And I believe --

7 JUDGE BAER: Is it just the triggering mechanism, or is it the entire
8 mechanism whereby you're sending a hardware signal instead of a software
9 signal?

10 MR. BROOKS: It would be the latter. I would say it substitutes
11 Copeland's flow control signal for the Vangemert's bit credit signal simply.
12 We're not revising hardware. It would be the operation of how the flow
13 control signal of Copeland is generated versus the one of Vangemert.

14 I would like to address several other points. Patent Owner's counsel
15 stated that the deadlock condition was not in any of the papers. However, it
16 was presented in the reply at pages 11 to 12, not that specific figure that's
17 shown in Slide 13 but the text to the left describing the example that is
18 simply illustrated by the figure.

19 Further, with respect to the serial link again, we'd like to point out that
20 the '214 patent upon which this particular argument is said to have found
21 support, never, in fact, mentions a serial link. It mentions a link and cables
22 but never specifically recites a serial link. Thus, the serial link was added, it
23 appears, in the '454 patent, which was filed some 14 years after the filing of
24 the '214 patent and by its, at that time, third owner.

25 JUDGE BAER: Could you just repeat that entire point again for me,
26 please, counsel?

1 MR. BROOKS: Yes, Your Honor. The '214 patent is what is used by
2 Patent Owner to attempt to define the serial link. However, the '214 patent
3 does not mention a serial link. It mentions a link, and it mentions a cable,
4 but does not specifically recite a serial link therein.

5 JUDGE BAER: Only the later patent, which is the patent at issue in
6 this case.

7 MR. BROOKS: Correct.

8 JUDGE BAER: Fair enough. Thank you.

9 MR. BROOKS: Turning back to the beginning or close to the
10 beginning, at Slide 7, we previously discussed the importance of begins
11 transmitting. I'd like to follow that up with it should be noted that it says
12 begins transmitting, not begins building, begins storing, or begins doing any
13 other operation, simply begins transmitting these buffer credit control words
14 in response to a credit signal for the buffer credit manager.

15 The subsequent sentence in column 4 at lines 16 through 23
16 effectively says that, at the beginning of the exchange, the receive buffer is
17 empty, buffer credit manager is provided with a negotiated frame size in
18 receive buffer capacity and is expected to generate and manage a number of
19 buffer credits at least equal to the maximum receiver buffer capacity divided
20 by the frame size with as little delay as possible. As discussed earlier with
21 respect to Dr. Caloyannides' testimony and Dr. Grimsrud's testimony,
22 putting this signal into the transmit buffer would incorporate delay into it
23 being transmitted.

24 Patent Owner, in addressing a question related to, I believe in his
25 discussion of a FIFO buffer, cites to other potential buffer types that were
26 not laid out by Patent Owner's expert. However, these additional buffer

1 types alleged by counsel are just that: counsel allegations. There is no
2 evidence, no expert testimony, that says that these other types of buffers
3 would be possible in this type of system. It is attorney argument only.
4 Further, neither Dr. Caloyannides, nor Dr. Grimsrud, were ever deposed to
5 attempt to determine if other types of buffers may have been possible.
6 Accordingly, I think there's little weight that should be afforded to these
7 arguments.

8 And turning to Slides 22 and 23, Patent Owner in their briefs have
9 made comments that it would make no sense to combine Copeland and
10 Vangemert as Vangemert makes overflow impossible. However, I think the
11 correct assertion is that the purpose of flow control is to make overflow
12 impossible. Copeland, by virtue of sending or denying more transmissions
13 to occur when the buffer is at 40 percent, would prevent overflow in that
14 system. Similarly, Vangemert with its credit system does the same.

15 With respect to the argument that the condition seen here would never
16 exist, I think that mischaracterizes the explanation of how this works. Yes,
17 the fill amount has space above it. It's the maximum data size. But, again,
18 Vangemert is an arbitrate loop. There may be data. It will not transmit
19 that buffer credit control signal if there's not that much space, so there must
20 be situations where that space is occupied by a data frame. If not, the buffer
21 credit control signal would never not be transmitted.

22 Further, in the combination, Patent Owner's counsel cited to
23 Copeland's teaching that the threshold was 40 percent and it would make no
24 sense and not thereby increase the latency or decrease the latency using
25 Copeland. Now, the 40 percent is just an example used in Copeland, not the
26 only value which could be set for the predetermined level.

1 Again, just to walk through the generation of the buffer credit control
2 word, I'll point to Slide 4, which shows the full system annotated of
3 Vangemert. To the left is the transceiver portion of the circuit or the system.
4 To the right is the previous portion having to do with de-coding, encoding of
5 data, the building of the blocks. Here, on the receive channel at the top of
6 Figure 3, a signal is received by the receiver. It is converted to parallel
7 signal. It is sent to the decoder and then to the receive controller. In that
8 data can be a request to transmit data, as noted in column 4, lines 11 through
9 16. It's received by the receive controller, which communicates to the buffer
10 credit manager. The buffer credit manager then determines whether there's
11 available space, transmit the control signal to the transmit controller, which
12 then transmits the buffer credit control word to the encoder, from the
13 encoder to the transceiver, where it is converted into a serial data frame and
14 then transmitted via the transmitter.

15 To address one other point presented by Patent Owner's counsel, their
16 argument with respect to the cumulative art argument, he noted that the
17 section cited to by -- I'm just going to find the right slide here -- the section
18 cited to, I'm at Slide 35, the MPEP 60904A as being directed to an IDS, that
19 is true. That is the section, however, that portion of the MPEP cites to
20 *Semiconductor Energy Laboratory Company v. Samsung Electronics*, a
21 Federal Circuit case from 2000, finding that a reference was not cumulative
22 since it contained a more complete combination of the claimed elements
23 than any other reference before the examiner. As presented in Petitioner's
24 reply at page 20, excuse me, at 22, Vangemert does contain a more complete
25 combination of the claimed elements than any other reference before the
26 examiner. As noted in our briefs, both in the petition and the reply,

1 Vangemert effectively teaches every element of Claim 1, other than the
2 claimed connector.

3 And then, finally, to touch on the difference between buffer credit
4 control word and credit control signals -- excuse me. Let me find the slide
5 that I'm looking for. In fact, let me point to, actually, Patent Owner's Slide
6 9. You can see the claim language in column 3 of 1005, the Vangemert
7 reference, when it's discussing transmitting these data frames and the control
8 words associated, I think it's important to read that language in detail. The
9 transmit controller 416 creates or updates exchange information and
10 exchange tables in response to commands and data from the node's IO bus.
11 So, again, not to jump back and forth too much, but it is receiving data from
12 the IO bus, so the right-hand side of Figure 4, the annotated figure here on
13 Slide 4, which is where the data is indeed coming from, from the host
14 device.

15 In response to commands and data from that bus, the transmit
16 controller generates control words and data frames -- and the and is
17 important -- in the transmit buffer and forwards them to the coder. It's clear
18 that this is all done as part of the data transmitting process. If we look at
19 both Patent Owner's highlights there, it cites if the node is transmitting or
20 receiving data or participating in an exchange of data. This is clearly a
21 different process than the flow control mechanisms cited in column 4 which
22 state that, before the data transfer can occur, the credit control word is sent
23 in response to the credit signal.

24 With that, do Your Honors have any additional questions?

1 JUDGE BAER: Anything additional from the panel? Thank you,
2 counsel. I think that will do. Patent Owner, we'll put 28 minutes on the
3 clock, and you may begin when you're ready.

4 MR. THEISS: Thank you. Thank you, Your Honor. I, again,
5 apologize for getting over a cold.

6 Your Honor, one of the questions you had asked was regarding the
7 usage of the word control words versus buffer credit control words in
8 Vangemert, and we've read through the reference and we think that column
9 3, starting at line 9 going to about line 13, really illustrates the fact that
10 Vangemert does not make a distinction between buffer credit control words
11 and control words generally. The passage reads, using control words, an
12 initiating node first arbitrates to get control of the loop, then notifies a
13 responding node of its desire to transmit data frames. So, specifically, here
14 we have a discussion of control words, not buffer credit control word,
15 control words specifically being used for gaining access for being able to
16 transmit over that common channel amongst multiple devices that we've
17 discussed as being --

18 JUDGE BAER: But the credit comparison hasn't even happened yet,
19 has it?

20 MR. THEISS: It's discussing the mechanism by which control is
21 obtained, how that individual is able to transmit the data.

22 JUDGE BAER: Right. It seems to me that this cuts against your
23 point because it's talking about a control word to get control of the loop, and
24 that's happening before there's been any comparison, any check to see if
25 there's enough room yet. So aren't control words something different than
26 credit control words?

1 MR. THEISS: I don't see it that way, Your Honor. The way the
2 transmission in a buffer credit control system works is you have to request
3 the buffer credit control word, the buffer credit control token I think was the
4 word that you used. So the process starts with requesting the token. Once
5 you're given the token, you can then broadcast.

6 JUDGE BAER: I think this point is a little bit more clear from the
7 discussion or from the discussion Vangemert at column 4, the paragraph
8 we've been discussing at length that begins at line 11 that says,
9 consequently, when received controller receives a control word indicating
10 that a remote node wishes to transmit data, the buffer credit manager is
11 enabled and the transmit controller begins transmitting buffer credit control
12 words. That's what I'm talking about. Aren't buffer credit control words
13 later in the system than just these control words?

14 MR. THEISS: Yes. To that extent, Your Honor, there are other
15 control words that are used. However, when it comes to the transmission
16 and their utilization, there is no separate discussion that buffer credit control
17 words are transmitted separately than control words. The only discussion of
18 how control words, be they buffer, be they non-buffer, is through the
19 transmit buffer 410. And, again, it's Petitioner's burden to show that they are
20 different because we have an express teaching that credit control words are
21 sent through the buffer. It's their burden.

22 You had asked me about Tachyon, specifically as it relates to is it an
23 implementation, so I would direct the Board to Exhibit 1014, page 5, and the
24 sentence I'll read from. The article on page 99 describes Tachyon, which is
25 HP's gigabit fiber channel chip. The article on page 94 presents a technical
26 description of fiber channel. Patent Owner cited to the technical description

1 of fiber channel on page 94. Petitioner cites to a specific implementation of
2 aspects of fiber channel on page 99, which is captured on page 99 of the
3 article, which I believe is page 101 of the exhibits. Give me one second to
4 get there. Reading from the first heading, the Tachyon chip implements the
5 FC1 and FC2 layers of the fiber lay channel standard. It doesn't implement
6 the entire standard. It implements aspects of it in a particular way according
7 to HP's interpretation and HP's chip. There is nothing in the fiber channel
8 standard that requires this particular Tachyon HP implementation. There's
9 nothing in Vangemert that says it has to be Tachyon's implementation.
10 There is nothing to connect Tachyon to Vangemert, other than the fact that
11 they both deal with a standard and they're different implementations and
12 improvements on that standard.

13 JUDGE BAER: Counsel, go back to Judge Ahmed's question.
14 Assume we agree with you that Tachyon isn't really describing Vangemert.
15 What about Judge Ahmed's question, which is, although this wasn't asserted
16 as a separate grounds, Petitioner did assert a reason why you would not hit
17 the second buffer. You contested that, said, no, Vangemert does hit the
18 second buffer, so Petitioner came back to support its rationale for why it
19 would have been known not to and they came back with a reference that you
20 had submitted yourself that showed that it was known to transmit control
21 signals without hitting a buffer. What's wrong with that logic, or is it that
22 the only thing that's wrong with it is they didn't present that clearly enough
23 in the petition?

24 MR. THEISS: Well, I think there's an important distinction there, and
25 I don't know if Your Honor overtly misspoke or I accidentally did. We
26 submitted the article starting on page 94 which talks about the fiber channel

1 standard and relied upon it for a teaching and discussion that the fiber
2 channel standard existed.

3 JUDGE BAER: Fine. But the point is this is certain prior art. This
4 article reflects what a person of skill in the art would have known at the
5 time. The Petitioner has said a person of skill in the art at the time it was
6 known to send a control signal out, storing it in a buffer. You came back
7 and said, no, that's not what's in Vangemert, and, to support their assertion
8 that a person of skill in the art would have known that, they've brought forth
9 a reference that, in fact, discloses that. What's wrong with that argument, or
10 is the only thing that's wrong with that argument is that it wasn't presented
11 clearly enough in the petition?

12 MR. THEISS: Well, Your Honor, I think the real issue there is
13 whether it's inherently there.

14 JUDGE BAER: Assume that Petitioner and the panel agrees with
15 you. It is not inherent in Vangemert. It is still a question of whether one of
16 skill in the art would have known to do it. Petitioner asserted that one of
17 skill in the art would have known to do it. You contested that assertion, and
18 they have presented evidence that, even if Vangemert doesn't teach that, one
19 of skill in the art would have known to do it, one of skill in the art would
20 have known to use this reference to clarify Vangemert for what to do.
21 What's wrong with that?

22 MR. THEISS: There's two aspects that are wrong with that, Your
23 Honor. First off, it's talking about an act buffer, which is not the buffer
24 credit control buffer that we're talking about or buffer credit control words
25 that we're talking about in Vangemert. And the other aspect that we're not
26 addressing is why would a person of ordinary skill in the art go for that

1 particular implementation for a different control signal? We're talking about
2 the acts, which is taught in Tachyon. Why would they go for that where
3 we've laid out alternatives that could have been laid out to Tachyon where it
4 wouldn't have what's taught in Tachyon regarding different buffer
5 architectures. It seems to be inappropriate to stand here and try to redesign
6 and use our patent as a blueprint based on possibilities of what a person of
7 ordinary skill in the art could have or perhaps done. We're guided by the
8 petition here, and the petition doesn't lay those things out.

9 JUDGE BAER: And assuming we disagree with you, is it a legal
10 error for us to -- what is the case law that says, well, we can't do that. We
11 have to rely on the petition so much that, if we were to rely on this additional
12 article, that would be a legal error? Is that a legal error or just something we
13 shouldn't do as a matter of fairness?

14 MR. THEISS: I think that Dynamic Drinkware lays it out pretty
15 clearly that the nature, the expedited nature of an IPR where everything has
16 to be governed and grounded by the petition. And Dynamic Drinkware
17 makes it very clear that, if there's was any level of doubt in the tribunal, that
18 the Patent Owner wins because they do not have the burden here. And for
19 us to sit here and speculate about what a person of ordinary skill in the art
20 might have considered to perhaps re-engineer the reference, devoid of what
21 is actually in the petition, yes, is a legal error under Dynamic Drinkware.

22 JUDGE BAER: Thank you.

23 MR. THEISS: I also wanted to address Claims 8 and 10, which I
24 believe Your Honor had asked me for. Was 8 and 10 correct?

25 JUDGE BAER: 18 and 10.

1 MR. THEISS: I'm sorry. 18 and 10. So I'd first like to address the
2 language of Claim 10.

3 JUDGE BAER: Could you give us just a minute to pull it up?

4 MR. THEISS: Yes.

5 JUDGE BAER: This is Claim 10 of the challenged patent, correct?

6 MR. THEISS: Yes, the '454 patent.

7 JUDGE BAER: Okay. Go ahead.

8 MR. THEISS: So it recites additional elements. Specifically, when it
9 comes to Claim 10, I think the critical issue that I was struggling to explain
10 to you as being the difference is the module is further operable to transmit
11 the serialized data frames over the serial link. We have an interruption of
12 this idea of a data frame. That is not captured in Claim 1.

13 JUDGE BAER: But isn't the point of this data, the passage right
14 before it that says the second serial data comprises serialized data frames,
15 including serialized control bits? Isn't the aspect that we're focusing on here,
16 whether the flow control is software control or hardware control, and isn't it
17 true that Claim 10 explicitly says that it's software control, the point being
18 that the patent drafter wanted to claim software control, the patent drafter did
19 so explicitly in Claim 10?

20 MR. THEISS: No, Your Honor. I think what you're failing to
21 appreciate is just because data goes over the data channel, it does not need to
22 be in the data frame. You can have a separate packet that has the control
23 signal. I believe Claim 8 actually illustrates it rather well. The module is
24 further operable to transmit the control bits through the serial link between
25 transmissions of the serial data frames. So we have a situation where you
26 can transmit the control information, then transmit the data, and then submit

1 control in an alternating fashion; or, in Claim 10 specifically, we can have a
2 circumstance by which we have one frame where we're taking the data and
3 also the control and transmitting it as one grouping of frame. I was trying to
4 avoid using the word frame, but it does have meaning.

5 And I think that's the meaningful distinction there, Your Honor, is
6 where the data and the control is transmitted over that channel. There's no
7 dispute that it goes over that channel, and that's required in Claim 1 in all of
8 the dependent claims. It's just how is the data structured as it's going over
9 that serial link.

10 JUDGE BAER: I think I understand. Thank you. That's helpful.

11 MR. THEISS: That was all I wanted to respond to, unless the Board
12 has any other questions.

13 JUDGE BAER: Anything else?

14 JUDGE MCSHANE: No questions for me. Thank you.

15 JUDGE BAER: Great.

16 JUDGE AHMED: No questions. Thank you.

17 JUDGE BAER: With that, we will conclude and let me just say that
18 we appreciate very much your efforts to be here, the explanations. We
19 thank, in particular, Petitioner for participating in our LEAP program. We're
20 glad to have you. Thank you for doing that. With that, we will go off the
21 record.

22 MR. THEISS: Thank you, Your Honors.

23 (Whereupon, the proceedings at 3:10 p.m. were concluded.)

IPR2023-00842
Patent 9,535,454 B2

PETITIONER:

Jon Trembath
Melanie Reichenberger
Kenneth Brooks
MICHAEL BEST & FRIEDRICH LLP
jrtrembath@michaelbest.com
mjreichenberger@michaelbest.com
ksbrooks@michaelbest.com

PATENT OWNER:

Brandon Theiss
Daniel Golub
VOLPE KOENIG
btheiss@vklaw.com
dgolub@vklaw.com